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Facility ID #: _____ MSD 007 037 278
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Hazardous Waste Management Permit.

Date of Document: 8.31.98

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SEP 4 1998
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MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

James I. Palmer, Jr., Executive Director

August 31, 1998

CERTIFIED MAIL NO. Z 039 746 105

Mr. Lloyd W. Taylor, General Manager
Textron Automotive Company, Inc.
635 Highway 332
Grenada, Mississippi 38901

Re: Issuance of Hazardous Waste Management
Permit No. HW-007-037-278
Textron Automotive Company, Inc.
Grenada, Grenada County

Dear Mr. Taylor:

On August 28, 1998, the Chief of the Environmental Permits Division acting on behalf of the Mississippi Department of Environmental Quality Permit Board approved the issuance of Mississippi Hazardous Waste Management Permit No. HW-007-037-278 to Textron Automotive Company, Incorporated. Enclosed is your copy of this document.

This permit is issued in accordance with the provisions of the Mississippi Solid Waste Disposal Act of 1974, particularly Section 17-17-27 thereof, and the regulations and standards adopted and promulgated thereunder. Please take the necessary time to review the requirements of this permit thoroughly. Any appeal of this permit action must be made within the thirty (30) day period provided for in Section 49-17-29(4)(b) of the Mississippi Code of 1972.

If you have any questions regarding this matter, please contact me directly at (601)961-5653.

Sincerely,

Tim Aultman
Environmental Compliance Division

Enclosure

cc: Ms. Lael Butler, USEPA-Region 4 (w/encl.)

← THIS COPY FOR

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Docket Number 450839

OFFICE OF POLLUTION CONTROL

P.O. Box 10385 Jackson, MS 39289-0385 Phone 601.961.5171 Fax 601.354.6612

**State of Mississippi
Hazardous Waste Management
Permit**

*Mod Changed
to Grenada*

THIS CERTIFIES THAT

**TEXTRON AUTOMOTIVE COMPANY
GRENADA, MISSISSIPPI**

I.D. NO. MSD 007 037 278

is hereby authorized to perform post-closure care of a closed surface impoundment and to conduct corrective action of Solid Waste Management Units.

This permit is issued under the authority of the Mississippi Solid Wastes Disposal Law, and particularly Section 17-17-27 thereof, and rules adopted and promulgated thereunder, all of which authorize the Department of Environmental Quality to enforce all applicable requirements under the Mississippi Hazardous Waste Management Regulations, and associated conditions included therein.

Effective 1st day of August, 1998

MISSISSIPPI ENVIRONMENTAL QUALITY PERMIT BOARD



**CHIEF, ENVIRONMENTAL PERMITS DIVISION
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY**

AUG 28 1998

DATE

Expires 31st day of July, 2008

Permit No: HW-007-037-278

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MODULE I - GENERAL PERMIT CONDITIONS

I.A. EFFECT OF PERMIT

Subject to MHWMR 270.4, compliance with this permit constitutes compliance, for purposes of enforcement, with Mississippi Solid Waste Disposal Law of 1974, Section 17-17-1, et seq. and subtitle C of RCRA, except for those requirements not included in the permit but which become effective by statute or which are promulgated by MHWMR Part 268. Issuance of this permit does not convey any property rights of any sort nor any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of any state or local laws or regulations. Compliance with the terms of this permit does not constitute a defense to any order issued or any action brought under Sections 3008(a), 3008(h), 3013, or 7003 of RCRA; Sections 106(a), 104, or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq., commonly known as CERCLA), or any other law providing for protection of public health or the environment.

I.B. PERMIT ACTIONS

I.B.1. Permit Modification, Revocation and Reissuance, and Termination

This permit may be modified, revoked and reissued, or terminated for cause, as specified in MHWMR 270.41, 270.42, or 270.43. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the Permittee, does not stay the applicability or enforceability of any permit condition.

I.B.2. Permit Renewal

This permit may be renewed as specified in MHWMR 270.30(b) and Permit Condition I.E.2. Review of any application for a permit renewal shall consider improvements in the state of control and measurement technology, as well as changes in applicable regulations.

I.C. SEVERABILITY

The provisions of this permit are severable, and if any portion of this permit, or the application of any provision of this permit to any circumstance is held invalid, the

application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

I.D. DEFINITIONS

For purposes of this permit, terms and conditions used herein shall have the same meaning as those in RCRA and MHWMR Parts 124, 260, 261, 264, 268, and 270; unless this permit specifically provides otherwise. Where terms are not defined in the regulation, the permit, or EPA and/or MDEQ guidelines or publications, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally-accepted scientific or industrial meaning of the term.

I.D.1. Action Levels

"Action levels" for the purposes of this permit are health-based concentrations of hazardous constituents determined to be indicators for the protection of human health and/or the environment.

I.D.2. Area of Concern

"Area of Concern" (AOC) for purposes of this permit includes any area having a probable release of a hazardous waste or hazardous constituent which is not from a solid waste management unit and is determined by the Executive Director to pose a current or potential threat to human health or the environment. Such areas of concern may require investigations and remedial action as required under Section 3005(c)(3) of RCRA and MHWMR 270.32(b)(2) in order to ensure adequate protection of human health and the environment.

I.D.3. Corrective Action Management Unit

A "Corrective Action Management Unit" (CAMU) for purposes of this permit, includes any area within a facility that is designated by the Executive Director under Part 264 Subpart S, for the purpose of implementing corrective action requirements under MHWMR 264.101 and RCRA Section 3008(h). A CAMU shall only be used for the management of remediation wastes pursuant to implementing such corrective action requirements at the facility.

I.D.4. Corrective Measures

"Corrective Measures" for purposes of this permit, include all corrective action necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit at the facility, regardless of the time at which waste was placed in the unit, as required under MHWMR 264.101. Corrective measures may address releases to air, soils, surface water, or groundwater.

I.D.5. Executive Director

"Executive Director" means the Executive Director of the Mississippi Department of Environmental Quality or his designee or authorized representative.

I.D.6. Extent of Contamination

"Extent of Contamination" for the purposes of this permit is defined as the horizontal and vertical area in which the concentrations of hazardous constituents in the environmental media being investigated are above detection limits or background concentrations indicative of the region, whichever is appropriate as determined by the Executive Director.

I.D.7. Facility

"Facility" for purposes of this permit includes all contiguous land and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units. For the purposes of implementing corrective action under MHWMR 264.101, a facility includes all contiguous property under control of the owner or operators seeking a permit.

I.D.8. Hazardous Constituent

"Hazardous Constituent" for purposes of this permit are those substances listed in MHWMR Part 261, Appendix VIII and Part 264 Appendix IX and include hazardous constituents released from solid waste and hazardous constituents that are reaction by-products.

I.D.9. Interim Measures

"Interim Measures" for purposes of this permit are actions necessary to minimize or prevent the further migration of contaminants and limit actual or potential human and environmental exposure to contaminants while long-term corrective action remedies are evaluated and, if necessary, implemented.

I.D.10. Land Disposal

"Land Disposal" for purposes of this permit and MHWMR Part 268 means any placement in or on the land except for a CAMU and includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, underground mine or cave, or concrete vault or bunker intended for disposal purposes.

I.D.11. Landfill

"Landfill" for the purposes of this permit includes any disposal facility or part of a facility where hazardous waste is placed in or on the land and is not a pile, a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, an underground mine, a cave, or a corrective action management unit.

I.D.12. Release

"Release" for purposes of this permit includes any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of any hazardous wastes or hazardous constituents.

I.D.13. Remediation Waste

"Remediation Waste" for the purposes of this permit includes all solid and hazardous wastes, and all media (including groundwater, surface water, soils, and sediments) and debris, which contain listed hazardous wastes or which themselves exhibit a hazardous waste characteristic, that are managed for the purpose of implementing corrective action requirements under MHWMR 264.101 and RCRA Section 3008(h). For a given facility, remediation wastes may originate only from within the facility boundary, but may include waste managed in implementing RCRA Sections 3004(v) or 3008(h) for releases beyond the facility boundary.

I.D.14. Solid Waste

"Solid Waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material, including solid, liquid, semisolid, or contained gaseous material, resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923).

I.D.15. Solid Waste Management Unit

"Solid Waste Management Unit" (SWMU) for the purposes of this permit includes any unit which has been used for the treatment, storage, or disposal of solid waste at any time, irrespective of whether the unit is or ever was intended for the management of solid waste. RCRA regulated hazardous waste management units are also solid waste management units. SWMUs include areas that have been contaminated by routine and systematic releases of hazardous waste or hazardous constituents, excluding one-time accidental spills that are immediately remediated and cannot be linked to solid waste management activities (e.g. product or process spills).

I.D.16. Temporary Unit

"Temporary Unit" for the purposes of this permit includes any temporary tanks and/or container storage areas used solely for treatment or storage of hazardous remediation wastes during specific remediation activities. Designated by the Executive Director, such units must conform to specific standards, and may only be in operation for a period of time as specified in this permit.

I.D.17. Unit

"Unit" for purposes of this permit includes, but is not limited to, any landfill, surface impoundment, waste pile, land treatment unit, incinerator, injection well, tank, container storage area, septic tank, drain field,

wastewater treatment unit, elementary neutralization unit, transfer station, or recycling unit.

I.E. DUTIES AND REQUIREMENTS

I.E.1. Duty to Comply

The Permittee shall comply with all conditions of this permit except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance, other than noncompliance authorized by an emergency permit, constitutes a violation of Mississippi Hazardous Waste Management Regulations and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

I.E.2. Duty to Reapply

If the Permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the Permittee shall submit a complete application for a new permit at least 180 days prior to permit expiration.

I.E.3. Permit Expiration

Pursuant to MHWMR 270.50, this permit shall be effective for a fixed term not to exceed ten (10) years. This permit and all conditions herein will remain in effect beyond the expiration date if the Permittee has submitted a timely, complete application (per MHWMR 270.10, 270.13 through 270.29) and, through no fault of the Permittee, the Executive Director has not issued a new permit, as set forth in MHWMR 270.51.

I.E.4. Permit Review Period

This permit shall be reviewed by the Executive Director five (5) years after the date of issuance and modified as necessary as required under MHWMR 270.50(d).

I.E.5. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

I.E.6. Duty to Mitigate

In the event of noncompliance with this permit, the Permittee shall take all reasonable steps to minimize releases to the environment and shall carry out such measures, as are reasonable, to prevent significant adverse impacts on human health and the environment.

I.E.7. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, adequate laboratory and process controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

I.E.8. Duty to Provide Information

The Permittee shall furnish to the Executive Director within a reasonable time any relevant information which the Executive Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Executive Director, upon request, copies of records required to be kept by this permit.

I.E.9. Inspection and Entry

Pursuant to MHWMR 270.30(I), the Permittee shall allow the Executive Director, or an authorized representative, upon the presentation of credentials and other documents, as may be required by law, to:

- I.E.9.a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- I.E.9.b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

- I.E.9.c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- I.E.9.d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by Mississippi Solid Waste Disposal Laws, any substances or parameters at any location.

I.E.10. Monitoring and Records

The Executive Director may require such testing by the Permittee, and may make such modifications to this permit, deemed necessary to ensure implementation of new regulations or requirements, or to ensure protection of human health or the environment.

- I.E.10.a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste to be analyzed must be the appropriate method from Appendix I of MHWMR Part 261, the EPA Region IV Environmental Compliance Branch's Standard Operating Procedure and Quality Assurance Manual (SOP) (most recent version), or an equivalent method approved by the Executive Director. Procedures for sampling contaminated media must be those identified in the EPA Region IV SOP or an equivalent method approved by the Executive Director. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846, Standard Methods of Wastewater Analysis, or an equivalent method approved by the Executive Director.
- I.E.10.b. The Permittee shall retain at the facility or other appropriate location as approved by the Executive Director, records of all monitoring information, including all calibration and maintenance records, records of all data used to prepare documents required by this permit, and records of all data used to complete the application for this permit for a period of at least three (3) years from the date of the sample, measurement, report, certification, and/or application, or until corrective action is completed, whichever date is later. These periods may be extended by the request of the Executive Director at any time and are automatically extended during the course of any

unresolved enforcement action regarding this facility. The Permittee shall also maintain records for all groundwater monitoring wells and associated groundwater surface elevations for the duration of the post-closure care period.

I.E.10.c. Pursuant to MHWMR 270.30(j)(3), records of monitoring information shall specify:

- i. The dates, exact place, and times of sampling or measurement;
- ii. The individual who performed the sampling or measurements;
- iii. The dates analyses were performed;
- iv. The individuals who performed the analyses;
- v. The analytical techniques or methods used, including any method detection limits for said technique; and
- vi. The results of such analyses.

I.E.11. Reporting Planned Changes

The Permittee shall give notice to the Executive Director, as soon as possible, of any planned physical alterations or additions which impact any regulated unit, or any SWMU, AOC, or area contaminated by them, including voluntary corrective measures, to the SWMUs or AOCs referenced in Conditions V.A.1., V.A.3., V.A.4., and V.C. at the permitted facility as defined in MHWMR 270.2.

I.E.12. Reporting Anticipated Noncompliance

The Permittee shall give advance notice to the Executive Director of any planned changes in the permitted facility or activity which may result in noncompliance with the requirements of this permit.

I.E.13. Transfer of Permits

This permit may be transferred to a new owner or operator only after notice to the Executive Director and only if it is modified or revoked and reissued pursuant to MHWMR 270.40(b) or 270.41(b)(2) to identify the new permittee and incorporate such other requirements as may be

necessary under the appropriate act. Before transferring ownership or operation of the facility during its operating life, or of a disposal facility the post-closure period, the Permittee shall notify the new owner or operator in writing of the requirements of MHWMR Parts 264 and 270, of HSWA, and of this permit.

I.E.14. Twenty-Four Hour Reporting

I.E.14.a. The Permittee shall report to the Executive Director any noncompliance or any imminent or existing hazard from a release of hazardous waste or hazardous constituents which may endanger health or the environment. Any such information shall be reported orally within twenty-four (24) hours from the time the Permittee becomes aware of the circumstances. The report shall include the following:

- i. Information concerning the release of any hazardous waste or hazardous constituents that may cause an endangerment to public drinking water supplies.
- ii. Any information of a release or discharge of hazardous waste or hazardous constituents, or a fire or an explosion at the facility which could threaten the environment or human health outside the facility.

I.E.14.b. The description of the occurrence and its cause shall include:

- i. Name, address, and telephone number of the owner or operator;
- ii. Name, address, and telephone number of the facility;
- iii. Date, time, and type of incident;
- iv. Name and quantity of materials involved;
- v. The extent of injuries, if any;

- vi. An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable; and
- vii. Estimated quantity and disposition of recovered material that resulted from the incident.

I.E.14.c. A written report shall also be provided within fifteen (15) days of the time the Permittee becomes aware of the circumstances. This submission shall contain the information specified under Conditions I.E.14.a. and b., a description of the noncompliance and its cause; the periods of noncompliance (including exact dates and times); whether the noncompliance has been corrected; and, if not, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

I.E.15. Other Noncompliance

The Permittee shall report all other instances of noncompliance not otherwise required to be reported above at the time monitoring reports are submitted. The reports shall contain the information listed in Condition I.E.14. of this Permit.

I.E.16. Other Information

Whenever the Permittee becomes aware that it failed to submit any relevant facts in the permit application or in any report to the Executive Director, the Permittee shall promptly submit such facts or information.

I.F. SIGNATORY REQUIREMENT

All applications, reports, or information submitted to or requested by the Executive Director, his designee, or authorized representative, shall be signed and certified in accordance with MHWMR 270.11 and 270.30(k).

I.G. REPORTS, NOTIFICATIONS, AND SUBMISSIONS TO THE EXECUTIVE DIRECTOR

All reports, notifications, or other submissions which are required by this permit are to be given or sent by certified mail to the Executive Director in care of the Environmental Permit Division Chief at the following address:

Mississippi Department of Environmental Quality
2380 Highway 80 West
P. O. Box 10385
Jackson, Mississippi 39289-0385

I.H. CONFIDENTIAL INFORMATION

In accordance with MHWMR 270.12, the Permittee may claim confidential any information required to be submitted by this permit.

I.I. DOCUMENTS TO BE MAINTAINED

The Permittee shall maintain at the facility, or in the custody of the facility contact person specified under Condition III.I., the following documents and all amendments, revisions and modifications to these documents:

- I.I.1. Inspection schedules, as required by MHWMR 264.15(b) and this permit.
- I.I.2. Financial assurance documentation, as required by MHWMR Part 264, Subpart H and this permit.
- I.I.3. Results of groundwater monitoring.
- I.I.4. Post-closure Plan, as required by MHWMR 264.118(c) and this permit.
- I.I.5. Waste Analysis Plan, as required by MHWMR 264.13 and this permit.
- I.I.6. Personnel training documents and records, as required by MHWMR 264.16(d) and this permit.
- I.I.7. Contingency Plan, as required by MHWMR 264.53(a) and this permit.
- I.I.8. Operating record, as required by MHWMR 264.73 and this permit.
- I.I.9. All other documents required by Condition I.E.10. and this permit.

MODULE II - GENERAL FACILITY CONDITIONS

II.A. FACILITY DESCRIPTION

This permit is issued to Textron Automotive Company for their facility located in Grenada, Mississippi [MSD 007 037 278] as described in the permit application submitted in December, 1996, and hereinafter referred to as "the application." This permit authorizes the Permittee to conduct post-closure care of the closed hazardous waste surface impoundment. These activities are identified and described in Permit Attachment E of this permit.

II.B. DESIGN AND OPERATION OF FACILITY

The Permittee shall construct, maintain, and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or nonsudden release of hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment, as required by MHWMR 264.31.

II.C. REQUIRED NOTICES

II.C.1. Hazardous Waste Imports

The Permittee shall not receive hazardous waste from a foreign source.

II.C.2. Hazardous Waste From Off-site Sources

The Permittee shall not receive any hazardous waste from off-site.

II.D. SECURITY

The Permittee shall comply with the security provisions of MHWMR 264.14(b)(2) and 264.1(c) as described in Permit Attachment E, page E-1, of this permit.

II.E. GENERAL INSPECTION REQUIREMENTS

The Permittee shall follow the inspection schedules set out in Permit Attachment E, page E-1, of this permit. The Permittee shall remedy any deterioration or malfunction discovered by an inspection, as required by MHWMR 264.15(c). Records of inspections shall be kept as required by MHWMR 264.15(d).

II.F. CONTINGENCY PLAN

II.F.1. Implementation of Plan

The Permittee shall immediately carry out the provisions of the Contingency Plan, Permit Attachment D, whenever there is a fire, explosion, or release of hazardous waste or constituents which could threaten human health or the environment.

II.F.2. Copies of Plan

The Permittee shall maintain a copy of the Contingency Plan at the facility and shall provide a copy to all police departments, fire departments, hospitals, and State and local emergency response teams that may be asked to provide emergency assistance, as required by 40 CFR 264.53.

II.F.3. Amendments to Plan

The Permittee shall review and immediately amend, if necessary, the Contingency Plan, as required by 40 CFR 264.54.

II.F.4. Emergency Coordinator

A trained emergency coordinator shall be available at all times in case of an emergency, as required by 40 CFR 264.55.

The names, addresses, and phone numbers of all persons qualified to act as emergency coordinators shall be supplied to the Regional Administrator at the time of certification. [40 CFR 264.52(d)]

II.G. POST-CLOSURE COST ESTIMATE

The Permittee shall maintain the post-closure cost estimate as required by MHWMR 264.144.

II.H. FINANCIAL ASSURANCE FOR POST-CLOSURE CARE

II.H.1. Post-Closure

The Permittee shall demonstrate continuous compliance with MHWMR 264.145 by maintaining documentation of financial assurance for post-closure. The Permittee may use any mechanism specified in MHWMR 264.145 in at least the amount estimated for post-closure care as required by Condition II.G. of this permit.

II.H.2. Adjustments and Reimbursements

The Permittee may request adjustments to and/or reimbursements from the financial mechanism in accordance with the procedures outlined in MHWMR 264.145.

II.I. INCAPACITY OF OWNERS OR OPERATORS, GUARANTORS, OR FINANCIAL INSTITUTIONS

The Permittee shall comply with MHWMR 264.148 whenever necessary.

II.J. RECORDKEEPING AND REPORTING

II.J.1. Operating Record

In addition to the recordkeeping and reporting requirements specified elsewhere in this permit, the Permittee shall maintain a written operating record at the facility or in the custody of the facility contact person as required by Condition III.I. At a minimum, the following information must be recorded and maintained in the operating record until final closure (as defined in MHWMR 260.10) of the facility, unless an alternate time frame is expressed elsewhere in this permit or is otherwise authorized by the Executive Director:

II.J.1.a. Records of inspections, as required by MHWMR 264.15(d).

II.J.1.b. Monitoring, testing, and/or analytical data, as required by MHWMR Part 264, Subpart F and this permit.

II.J.1.c. Groundwater monitoring as required by this permit.

II.K. SPECIAL CONDITIONS

Whenever a discrepancy exists between the wording of an item in the application and wording in this permit, the permit requirements take precedence over the application.

MODULE III - POST-CLOSURE CARE

III.A. APPLICABILITY

The conditions of this part apply to the closed surface impoundment described in Attachment B and depicted in Figure 2, Attachment A, in accordance with MHWMR 264.110.

III.B. POST-CLOSURE CARE PERIOD

Post-closure care of the unit shall follow the procedures specified in the Post-Closure Plan, Attachment E, and shall continue throughout the effective period of this permit as specified in MHWMR 264.117(a)(1); unless otherwise modified under MHWMR 264.117(a)(2).

III.C. POST-CLOSURE INSPECTION

The Permittee shall inspect the facility items indicated in the Inspection Summary, Attachment F, of this permit. The Permittee shall remedy any deterioration or malfunction of equipment or structures discovered by an inspection as required by MHWMR 264.15(c). Records of inspections shall be kept as required by MHWMR 264.15(d) and Condition II.J.1.a. of this permit.

III.D. POST-CLOSURE GROUNDWATER MONITORING

Post-closure groundwater monitoring shall be conducted as required by MHWMR 264.117(a), 264.228(b)(3), and according to the procedures described in Module IV and the Groundwater Monitoring Plan, Attachment C, of this permit.

III.E. POST-CLOSURE MAINTENANCE

Maintenance of the cover, drainage control structures, benchmarks, security devices, and all post-closure monitoring wells shall be conducted as required by MHWMR 264.117(a)(1)(ii), 264.228(b), and as described below:

III.E.1. Cover

During the post-closure period, vegetation at the facility shall be controlled by routine mowing as indicated on page E-2 of the Post Closure Plan (Permit Attachment E).

III.E.2. Monitoring Wells

The integrity of all monitoring wells shall be maintained. The protective posts and concrete pads shall be free of cracks or other damage and free of debris and standing water.

III.E.3. Benchmarks

All surveyed benchmarks shall be maintained.

III.F. POST-CLOSURE PROPERTY USE

Post-closure use of the closed unit must comply with the standards in MHWMR 264.117(c).

III.G. REMOVAL OF WASTE

If the Permittee or any subsequent owner or operator of the land upon which the hazardous waste disposal unit is located wishes to remove hazardous wastes and hazardous waste residues and/or contaminated soils, then he shall request a modification to this post closure permit in accordance with the applicable requirements in MHWMR Parts 124 and 270. The Permittee or any subsequent owner or operator of the land shall demonstrate that the removal of hazardous wastes will satisfy the criteria of MHWMR 264.117(c).

III.H. COMPLETION OF POST-CLOSURE CARE PERIOD

No later than sixty (60) days after completion of the established post-closure care period for the hazardous waste disposal unit, the Permittee shall submit to the Executive Director, by registered mail, a certification that the post-closure care for the hazardous waste disposal unit was performed in accordance with the specifications in the approved Post-Closure Plan. The certification must be signed by the Permittee and an independent, registered professional engineer.

Documentation supporting the independent, registered professional engineer's certification must be furnished to the Executive Director upon request until the Executive Director releases the Permittee from the financial assurance requirements for post-closure care under MHWMR 264.145(i).

III.I. RETENTION OF PLAN

The Permittee shall designate a facility contact person for all regulatory purposes and notify the Executive Director in writing as to where the facility contact person may be reached during regular business hours. The facility contact person shall retain an updated copy of the Post-Closure Plan as specified in MHWMR 264.118(b)(3) and when applicable, 264.118(c).

III.J. POST-CLOSURE PERMIT MODIFICATIONS

The Permittee must request a permit modification to authorize a change in the approved Post-Closure Plan. This request must be in accordance with applicable requirements of MHWMR Parts 124 and 270, and must include a copy of the proposed amended Post-Closure Plan for approval by the Executive Director. The Permittee shall request a permit modification whenever changes in operating plans or facility design affect the approved Post-Closure Plan or other events occur that affect the approved Post-Closure Plan. The Permittee must submit a written request for a permit modification at least 60 days prior to the proposed change in facility design or operation, or no later than 60 days after an unexpected event has occurred which has affected the post-closure.

MODULE IV - GROUNDWATER PROTECTION

IV.A. APPLICABILITY

The requirements of this part apply to the closed surface impoundment area as described in Attachment B and depicted on Figure 2 of Attachment A.

IV.B. MONITORING PROGRAM

The Permittee shall establish a groundwater monitoring program as required by Condition IV.E.

IV.C. GROUNDWATER MONITORING SYSTEM

The Permittee shall install and maintain groundwater monitoring wells in accordance with the plans and specifications in Section 1.5 of the Groundwater Monitoring Plan [Attachment C]. These wells shall be maintained at the locations depicted on Figure 3 [Attachment A] and in conformance with the following designations:

IV.C.1. Compliance Monitoring Wells

For the purposes of this permit, wells MW-2, MW-4, MW-5, and/or any applicable wells required under Condition IV.C.3. shall be designated as Compliance Monitoring Wells.

IV.C.2. Background Monitoring Wells

For the purposes of this permit, well MW-1 and/or any applicable wells required under Condition IV.C.3. shall be designated as the background monitoring well.

IV.C.3. Additional Monitoring Wells

Due to changes that may occur under the detection monitoring program; construction, redesignation, or deletion of wells from the monitoring program may be required. If additional wells are deemed necessary, the permittee must submit an application for a permit modification.

IV.C.4. Replacement Procedure

Should the Permittee determine during an inspection or sampling event that any well identified in Condition IV.C. has been damaged such that it no longer meets the requirements of MHWMR 264.97(a) and (c), the Permittee shall notify the Executive Director in writing within seven (7) days of making such a determination and replace or repair the damaged well within thirty (30) days. Replacement wells should be constructed to the same specifications as the well being replaced.

IV.C.5. Deletion Procedure

All wells deleted from the system shall be plugged and abandoned in accordance with Mississippi Office of Land and Water Resources regulations. Well plugging and abandonment methods and certification shall be submitted to the Executive Director within thirty (30) days from the date the wells are removed from the monitoring program.

IV.D. POINT OF COMPLIANCE

The point of compliance for the waste management unit is represented by a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the closed surface impoundment.

IV.E. GROUNDWATER MONITORING REQUIREMENTS

IV.E.1. The Permittee shall conduct MHWMR 264 Appendix IX sampling (RCRA Metals, Volatile Organics, & Semi-Volatile Organics only) quarterly for the first year of this permit. The sampling should be performed on MW-1, MW-2, MW-4, MW-5, and any other applicable wells required under Condition IV.C.

IV.E.2. Using the data from the four rounds of sampling required under Condition IV.E.1., the permittee shall establish background mean values in accordance with MHWMR 264.97 for each parameter and constituent identified.

IV.E.2.a. The permittee shall determine whether any constituent is present in the downgradient wells at levels considered statistically significant using the statistical procedure specified in Condition IV.L. The permittee shall perform the analysis required by this condition within sixty (60) days after completion of the final quarterly event sampling.

- IV.E.3. If the permittee determines pursuant to Condition IV.E.2.a. that no constituents are present in the downgradient wells at statistically significant levels, the permittee shall continue groundwater monitoring as detailed in Condition IV.F.
- IV.E.4. If the permittee determines pursuant to Condition IV.E.2.a. that there is a statistically significant increase above background levels for any parameter or constituent identified in Condition IV.E.1. the permittee may either:
- IV.E.4.a. Demonstrate to the satisfaction of the Executive Director that a source other than the regulated unit caused the increase or that the increase resulted from an error in sampling, analysis, or evaluation, or
 - IV.E.4.b. Determine the regulated unit is the source of observed increase, and submit an application to the Executive Director for a permit modification to make appropriate changes to the monitoring program which will satisfy the regulations of MHWMR 264.91 through 264.100.
 - IV.E.4.c. In either case, the Permittee shall:
 - IV.E.4.c.1. Notify the Executive Director in writing within seven (7) days that he intends to make a demonstration that the source is not the regulated unit or that he intends to pursue a modification to the monitoring portion of the permit.
 - IV.E.4.c.2. Within ninety (90) days, submit a report to the Executive Director which demonstrates a source other than the regulated unit caused the increase, or that the increase resulted from an error in sampling, analysis, or evaluation.
 - IV.E.4.c.3. Within ninety (90) days submit to the Executive Director an application for a permit modification to make appropriate changes to the groundwater monitoring program at the facility.
 - IV.E.4.c.4. Continue to monitor in accordance with the detection monitoring program at the facility.

IV.F. DETECTION MONITORING

- IV.F.1. The Permittee shall determine groundwater quality at each monitoring well at the compliance point during the post-closure care period for those parameters and constituents listed in Condition IV.G. (groundwater protection standard). The Permittee shall express the groundwater quality at each monitoring well in a form necessary for the determination of statistically significant increases. The sampling frequency shall be semi-annual and begin no later than 180 days after completion of the MHWMR 264 Appendix IX sampling, as described in Condition IV.E.1.
- IV.F.2. The permittee shall use the background mean value established by previous sampling and in accordance with MHWMR 264.97 for each constituent listed in Condition IV.G. (groundwater protection standard). If a background value does not exist, the MDL for that parameter/constituent shall be used.
- IV.F.3. The permittee shall sample the background well at least semi-annually. Permittee shall compare each new measurement of a constituent's concentration in MW-1 to its background mean value. If the new semi-annual concentration falls within the existing background mean value, it will be added to the database to establish a new background mean value.
- IV.F.4. If the new semi-annual data from the background well falls outside of the background mean value, the Permittee shall resample the affected well and repeat the comparison for the affected constituent(s) within thirty (30) days. If the second observation falls within the background mean value, the Permittee shall reject the first observation as an outlier and add the second observation to the background mean value database. If the second observation also lies outside the established mean background value, the Permittee shall notify the Executive Director in writing of this event within seven (7) days.
- IV.F.5. The Permittee shall determine the groundwater flow rate and direction in the uppermost aquifer at least annually.

IV.G. GROUNDWATER PROTECTION STANDARDS

The groundwater protection standards under MHWMR 264.92 shall be equal to the concentration limits specified in Condition IV.H. These groundwater protection standards are to be based on background levels for the constituents listed. The Permittee may petition the Executive Director for a permit modification to establish additional groundwater protection standards based on alternate concentration limits under MHWMR 264.94.(b).

IV.H. INDICATOR PARAMETERS AND HAZARDOUS CONSTITUENTS

The Permittee shall monitor MW-1, MW-2, MW-4, and MW-5, as described in Permit Condition IV.C., for the following constituents:

<u>Constituent</u>	<u>Concentration Limit</u>
Chromium	*Background
Toluene	*Background
Trichloroethene	*Background
Any other constituents identified during the MHWMR 264 Appendix IX sampling.	*Background

*Background - Background mean value established under Condition IV.E.2.

IV.I. DETECTION MONITORING STATISTICAL PROCEDURE

- IV.I.1. The Permittee shall use a statistical procedure as outlined in Condition IV.L. to evaluate the groundwater data collected as part of the detection monitoring program, except as specified in Condition IV.I.3.
- IV.I.2. When the concentration of a constituent is reported by the laboratory as not detected or below detection limits, the Permittee shall use the method detection limit for reporting that constituent in evaluating monitoring results.
- IV.I.3. For compounds that are not naturally occurring and/or those compounds not detected in background samples, the following conditions will constitute significant evidence of a release (subject to QA/QC checks and confirmation by retesting), and shall be used in lieu of the statistical procedure presented in Condition IV.L.
- IV.I.3.a. A compound is detected above a PQL in a downgradient well.
- IV.I.3.b. More than one compound is detected in a well above the MDL, but below the PQL in a single event.
- IV.I.3.c. One compound is detected in a well above the MDL, but below the PQL, either in a single well or in multiple wells, and a review of data shows trends or indications that a release may have occurred. Such

a review of available data, including graphical and spatial analyses, must be documented by the facility owner/operator either at the next scheduled monitoring event or as otherwise required by permit condition, regulation, or law.

- IV.I.4. A retest will consist of analyzing two additional samples. Each sample must be collected on separate events (i.e. after re-purging the wells prior to sampling). It will not be necessary, however, to obtain an independent sample with respect to the interval of time between subsequent samples. Confirmation of a detect will occur if analysis of either sample collected during the retest detects the constituent(s) observed in the original sample. If additional or different constituents are found in a retest, further sampling may be necessary to determine if a release of additional constituents has occurred.

IV.J. SAMPLING AND ANALYSIS PROCEDURES

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the groundwater monitoring wells indicated in Condition IV.C.:

- IV.J.1. Prior to collecting groundwater samples from any monitoring well, the Permittee shall measure the water level in the well, calculate the volume of water in the well, and purge the well per the procedures in Section 13.3 of the Groundwater Monitoring Plan [Attachment C].
- IV.J.2. The Permittee shall collect samples in accordance with the procedures set forth in Section 13.3 of the Groundwater Monitoring Plan [Attachment C].
- IV.J.3. Samples shall be preserved in accordance with the procedures in Section 13.2 of the Groundwater Monitoring Plan [Attachment C].
- IV.J.4. Samples shall be shipped in accordance with the procedures in Section 13.5 of the Groundwater Monitoring Plan [Attachment C].
- IV.J.5. Groundwater samples shall be tracked and controlled using the sample identification and chain-of-custody procedures specified in Section 13.4 of the Groundwater Monitoring Plan [Attachment C].
- IV.J.6. Samples shall be analyzed in accordance with the methods specified in Section 1, Table 1.3 of the Groundwater Monitoring Plan [Attachment C].
- IV.J.7. Appropriate QA/QC measures (field, trip, and equipment blanks and duplicate samples) will be utilized per Section 1, Table 1.3 of the Groundwater Monitoring Plan [Attachment C].

IV.K. GROUNDWATER SURFACE ELEVATION

The Permittee shall determine the elevation of the groundwater surface to the nearest 0.01 foot at each well each time the groundwater is sampled, in accordance with Condition IV.F.1.

IV.L. STATISTICAL PROCEDURES

When evaluating the monitoring results, the Permittee shall use an appropriate statistical method listed in MHWMR 264.97.(h) or another method approved by the Executive Director.

IV.M. RECORDKEEPING AND REPORTING

IV.M.1. The Permittee shall enter all monitoring, testing and analytical data obtained in the operating record. The data must include all computations, calculated means, variances, and results of the statistical test(s) specified in Conditions IV.I.3. and IV.L.

IV.M.2. The Permittee shall submit the analytical results required by Conditions IV.K. and IV.M.1. semi-annually by August 1 and February 1 of each year.

MODULE V - SOLID WASTE MANAGEMENT UNITS

V.A. APPLICABILITY

The Conditions of this part apply to:

- V.A.1. The solid waste management units (SWMUs) and areas of concern (AOCs) identified in Permit Attachment G, Table G.1., which require a RCRA Facility Investigation (RFI);
- V.A.2 The SWMUs and AOCs identified in Permit Attachment G, Table G.2., which require no further investigation under this permit at this time;
- V.A.3. The SWMUs and AOCs identified in Permit Attachment G, Table G.3., which require confirmatory sampling;
- V.A.4. Any additional SWMUs or AOCs discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means; As used in this Part of the permit, the terms "discover", "discovery", or "discovered" refer to the date on which the Permittee either, (1) visually observes evidence of a new SWMU or AOC, (2) visually observes evidence of a previously unidentified release of hazardous constituents to the environment, or (3) receives information which suggests the presence of a new release of hazardous waste or hazardous constituents to the environment;
- V.A.5. Contamination which has migrated beyond the facility boundary, if applicable. The Permittee shall implement corrective actions beyond the facility boundary where necessary to protect human health and the environment, unless the Permittee demonstrates to the satisfaction of the Executive Director that, despite the Permittee's best efforts, as determined by the Executive Director, the Permittee was unable to obtain the necessary permission to undertake such actions. The Permittee is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis. Assurances of financial responsibility for completion of such off-site corrective action will be required.

V.B. NOTIFICATION AND ASSESSMENT REQUIREMENTS FOR NEWLY IDENTIFIED SWMUs AND AOCs

V.B.1. The Permittee shall notify the Executive Director in writing, within fifteen (15) calendar days of discovery, of any suspected new AOC as discovered under Condition V.A.4. The notification shall include, at a minimum, the location of the AOC and all available information pertaining to the nature of the release (e.g., media affected, hazardous constituents released, magnitude of release, etc.). The Executive Director may conduct, or require the Permittee to conduct, further assessment (i.e., Confirmatory Sampling) in order to determine the status of the suspected AOC. The Executive Director will notify the Permittee in writing of the final determination as to the status of the suspected AOC. If the Executive Director determines that further investigation of an AOC is required, the permit will be modified in accordance with MHWMR 270.41.

V.B.2. The Permittee shall notify the Executive Director in writing, within fifteen (15) calendar days of discovery, of any additional SWMU as discovered under Condition V.A.4.

V.B.3. The Permittee shall prepare and submit to the Executive Director, within ninety (90) calendar days of notification, a SWMU Assessment Report (SAR) for each SWMU identified under Condition V.B.2. At a minimum, the SAR shall provide the following information:

- V.B.3.a. Location of unit(s) on a topographic map of appropriate scale such as required under MHWMR 270.14(b)(19).
- V.B.3.b. Designation of type and function of unit(s).
- V.B.3.c. General dimensions, capacities and structural description of unit(s) (supply any available plans/drawings).
- V.B.3.d. Dates that the unit(s) was operated.
- V.B.3.e. Specification of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on hazardous constituents in the wastes.

V.B.3.f. All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include groundwater data, soil analyses, air, and/or surface water data).

V.B.4. Based on the results of the SAR, the Executive Director shall determine the need for further investigations at the SWMUs covered in the SAR. If the Executive Director determines that such investigations are needed, the Permittee shall be required to prepare a plan for such investigations as outlined in Condition V.E.1.b. or V.D.1.

V.C. NOTIFICATION REQUIREMENTS FOR NEWLY DISCOVERED RELEASES FROM SWMUs or AOCs

V.C.1. The Permittee shall notify the Executive Director in writing of any newly discovered release(s) of hazardous waste or hazardous constituents discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means, within fifteen (15) calendar days of discovery. Such newly discovered releases may be from SWMUs or AOCs identified in Condition V.A.2. or SWMU or AOCs identified in Condition V.A.4. for which further investigation under Condition V.B.4. was not required.

V.C.2. If the Executive Director determines that further investigation of the SWMUs or AOCs is needed, the Permittee shall be required to prepare a plan for such investigations as outlined in Condition V.E.1.b.

V.D. CONFIRMATORY SAMPLING (CS)

V.D.1. The Permittee shall prepare and submit to the Executive Director, within forty five (45) calendar days of notification by the Executive Director, for SWMUs or AOCs identified in Condition V.A.3. and Permit Attachment G.3., a Confirmatory Sampling (CS) Work Plan to determine any releases from these SWMUs or AOCs. The CS Work Plan shall include schedules of implementation and completion of specific actions necessary to determine whether or not a release has occurred. It should also address applicable requirements and affected media. In order to partly or wholly satisfy the CS requirement, the use of data obtained outside of the permit structure may be submitted with the work plan for the Executive Director's review and approval. Within forty-five (45) calendar days of notification by the Executive Director, the Permittee shall prepare and submit to the Executive Director a CS Work Plan to determine if any release has occurred from

suspected AOCs per Condition V.B.1. or newly identified SWMUs per Condition V.B.4.

- V.D.2. The CS Work Plan must be approved by the Executive Director, in writing, prior to implementation. The Executive Director shall specify the start date of the CS Work Plan schedule in the letter approving the CS Work Plan. If the Executive Director disapproves the CS Work Plan, the Executive Director shall either (1) notify the Permittee in writing of the CS Work Plan's deficiencies and specify a due date for submission of a revised CS Work Plan, (2) revise the CS Work Plan and notify the Permittee of the revisions, or (3) conditionally approve the CS Work Plan and notify the Permittee of the conditions.
- V.D.3. The Permittee shall implement the confirmatory sampling in accordance with the approved CS Work Plan.
- V.D.4. The Permittee shall prepare and submit to the Executive Director in accordance with the schedule in the approved CS Work Plan, a Confirmatory Sampling (CS) Report identifying those SWMUs or AOCs listed in Condition V.A.3. that have released hazardous waste or hazardous constituents into the environment. The CS Report shall include all data, including raw data, and a summary and analysis of the data, that supports the above determination.
- V.D.5. Based on the results of the CS Report, the Executive Director shall determine the need for further investigations at the SWMUs or AOCs covered in the CS Report. If the Executive Director determines that such investigations are needed, the Permittee shall be required to prepare a plan for such investigations as outlined in Condition V.E.1.b. The Executive Director will notify the permittee of any no further action decision.

V.E. RCRA FACILITY INVESTIGATION (RFI)

V.E.1. RFI Work Plan(s)

- V.E.1.a. The Permittee shall prepare and submit to the Executive Director, within ninety (90) calendar days of notification by the Executive Director, a RCRA Facility Investigation (RFI) Work Plan(s) for those units identified in Condition V.A.1. This Work Plan shall be developed to meet the requirements of Condition V.E.1.c.

- V.E.1.b. The Permittee shall prepare and submit to the Executive Director, within ninety (90) calendar days of notification by the Executive Director, an RFI Work Plan for those units identified under Condition V.B.4., Condition V.C.2., or Condition V.D.5. The RFI Work Plan(s) shall be developed to meet the requirements of Condition V.E.1.c.
- V.E.1.c. The RFI Work Plan(s) shall meet the requirements of Permit Attachment H. The RFI Work Plan(s) shall include schedules of implementation and completion of specific actions necessary to determine the nature and extent of contamination and the potential pathways of contaminant releases to the air, soil, surface water, and groundwater. The Permittee must provide sufficient justification and associated documentation that a release is not probable or has already been characterized if a unit or a media/pathway associated with a unit (groundwater, surface water, soil, subsurface gas, or air) is not included in the RFI Work Plan(s). Such deletions of a unit, media or pathway from the RFI(s) are subject to the approval of the Executive Director. The Permittee shall provide sufficient written justification for any omissions or deviations from the minimum requirements of Permit Attachment H. Such omissions or deviations are subject to the approval of the Executive Director. In addition, the scope of the RFI Work Plan(s) shall include all investigations necessary to ensure compliance with MHWMR 264.101(c).
- V.E.1.d. The RFI Work Plan(s) must be approved by the Executive Director, in writing, prior to implementation. The Executive Director shall specify the start date of the RFI Work Plan schedule in the letter approving the RFI Work Plan(s). If the Executive Director disapproves the RFI Work Plan(s), the Executive Director shall either (1) notify the Permittee in writing of the RFI Work Plan's deficiencies and specify a due date for submission of a revised RFI Work Plan, (2) revise the RFI Work Plan and notify the Permittee of the revisions and the start date of the schedule within the approved RFI Work Plan, or (3) conditionally approve the RFI Work Plan and notify the Permittee of the conditions.

V.E.2. RFI Implementation

The Permittee shall implement the RFI(s) in accordance with the approved RFI Work Plan(s) and Permit Attachment H. The Permittee shall notify the Executive Director within twenty (20) days prior to any sampling activity.

V.E.3. RFI Reports

V.E.3.a. If the time required to conduct the RFI(s) is greater than one hundred eighty (180) calendar days, the Permittee shall provide the Executive Director with quarterly RFI Progress Reports (90 day intervals) beginning ninety (90) calendar days from the start date specified by the Executive Director in the RFI Work Plan approval letter. The Progress Reports shall contain the following information at a minimum:

- i. A description of the portion of the RFI completed;
- ii. Summaries of findings;
- iii. Summaries of any deviations from the approved RFI Work Plan during the reporting period;
- iv. Summaries of any significant contacts with local community public interest groups or State government;
- v. Summaries of any problems or potential problems encountered during the reporting period;
- vi. Actions taken to rectify problems;
- vii. Changes in relevant personnel;
- viii. Projected work for the next reporting period; and
- ix. Copies of daily reports, inspection reports, data, etc.

V.E.3.b. The Permittee shall prepare and submit to the Executive Director Draft and Final RCRA Facility Investigation Report(s) for the investigations conducted pursuant to the RFI Work Plan(s) submitted under Condition V.E.1. The Draft

RFI Report(s) shall be submitted to the Executive Director for review in accordance with the schedule in the approved RFI Work Plan(s). The Final RFI Report(s) shall be submitted to the Executive Director within thirty (30) calendar days of receipt of the Executive Director's final comments on the Draft RFI Report. The RFI Report(s) shall include an analysis and summary of all required investigations of SWMUs and AOCs and their results. The summary shall describe the type and extent of contamination at the facility, including sources and migration pathways, identify all hazardous constituents present in all media, and describe actual or potential receptors. The RFI Report(s) shall also describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative of the area. If the Draft RFI Report is a summary of the initial phase investigatory work, the report shall include a work plan for the final phase investigatory actions required based on the initial findings. Approval of the final phase work plan shall be carried out in accordance with Condition V.E.1.d. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support a Corrective Measures Study, if necessary.

- V.E.3.c. The Permittee shall prepare and submit to the Executive Director, along with the Draft and Final RFI Report(s), action levels for each of the hazardous constituents reported in Condition V.E.3.b. Action levels shall be calculated as specified in Appendix F of this permit.
- V.E.3.d. The Executive Director will review the RFI Report(s), including the action levels described in Condition V.E.3.c. The Executive Director shall notify the Permittee of the need for further investigative action if necessary and, if appropriate at this moment of the investigation, inform the Permittee, if not already notified, of the need for a Corrective Measures Study to meet the requirements of V.G and MHWMR 264.101. The Executive Director will notify the permittee of any no further action decision. Any further investigative action required by the Executive Director shall be prepared

and submitted in accordance with a schedule specified by the Executive Director and approved in accordance with Condition V.E.1.d.

V.F. INTERIM MEASURES (IM)

V.F.1. IM Work Plan

- V.F.1.a. Upon notification by the Executive Director, the Permittee shall prepare and submit an Interim Measures (IM) Work Plan for any SWMU or AOC which the Executive Director determines is necessary. IM are necessary in order to minimize or prevent the further migration of contaminants thereby limiting current and future potential for human and environmental exposure to contaminants while long-term corrective action remedies are evaluated and, if necessary, implemented. The IM Work Plan shall be submitted within thirty (30) calendar days of such notification and shall include the elements listed in V.F.1.b. Such interim measures may be conducted concurrently with investigations required under the terms of this permit. The Permittee may initiate IM by submitting an IM Work Plan for approval and reporting in accordance with the requirements under Condition V.F.
- V.F.1.b. The IM Work Plan shall ensure that the interim measures are designed to mitigate any current or potential threat(s) to human health or the environment and is consistent with and integrated into any long-term solution at the facility. The IM Work Plan shall include: the interim measures objectives, procedures for implementation (including any designs, plans, or specifications), and schedules for implementation.
- V.F.1.c. The IM Work Plan must be approved by the Executive Director, in writing, prior to implementation. The Executive Director shall specify the start date of the IM Work Plan schedule in the letter approving the IM Work Plan. If the Executive Director disapproves the IM Work Plan, the Executive Director shall either (1) notify the Permittee in writing of the IM Work Plan's deficiencies and specify a due date for submission of a revised IM Work Plan, (2) revise the IM Work Plan and notify the Permittee of the revisions and the start date of the schedule within the approved IM Work

Plan, or (3) conditionally approve the IM Work Plan and notify the Permittee of the conditions.

V.F.2. IM Implementation

- V.F.2.a. The Permittee shall implement the interim measures in accordance with the approved IM Work Plan.
- V.F.2.b. The Permittee shall give notice to the Executive Director as soon as possible of any planned changes, reductions or additions to the IM Work Plan.
- V.F.2.c. Final approval of corrective action required under MHWMR 264.101 which is achieved through interim measures shall be in accordance with MHWMR 270.41 and Condition V.H. as a permit modification.

V.F.3. IM Reports

- V.F.3.a. If the time required for completion of interim measures is greater than one year, the Permittee shall provide the Executive Director with progress reports at intervals specified in the approved Work Plan. The Progress Reports shall contain the following information at a minimum:
 - i. A description of the portion of the interim measures completed;
 - ii. Summaries of findings;
 - iii. Summaries of any deviations from the IM Work Plan during the reporting period;
 - iv. Summaries of any problems or potential problems encountered during the reporting period; and
 - v. Projected work for the next reporting period.
- V.F.3.b. The Permittee shall prepare and submit to the Executive Director, within ninety (90) calendar days of completion of interim measures conducted under Condition V.F., an Interim Measures (IM) Report. The IM Report shall contain the

following information at a minimum:

- i. A description of interim measures implemented;
- ii. Summaries of results;
- iii. Summaries of all problems encountered;
- iv. Summaries of accomplishments and/or effectiveness of interim measures; and
- v. Copies of all relevant laboratory/monitoring data, etc. in accordance with Condition I.D.9.

V.G. CORRECTIVE MEASURES STUDY

V.G.1. Corrective Measures Study (CMS) Work Plan

V.G.1.a. The Permittee shall prepare and submit a CMS Work Plan for those units requiring a CMS within ninety (90) calendar days of notification by the Executive Director that a CMS is required. This CMS Work Plan shall be developed to meet the requirements of Condition V.G.1.b. The Permittee may seek approval from the Executive Director for concurrent RFI/CMS. The CMS may be performed concurrent with the RFI process if the Executive Director determines that sufficient investigative details are available to allow concurrent action.

V.G.1.b. The CMS Work Plan shall meet the requirements of Permit Attachment I at a minimum. The CMS Work Plan shall include schedules of implementation and completion of specific actions necessary to complete a CMS. The Permittee must provide sufficient justification and/or documentation for any unit deleted from the CMS Work Plan. Such deletion of a unit is subject to the approval of the Executive Director. The CMS shall be conducted in accordance with the approved CMS Work Plan. The Permittee shall provide sufficient written justification for any omissions or deviations from the minimum requirements of Permit Attachment I. Such omissions or deviations are subject to the approval of the

Executive Director. The scope of the CMS Work Plan shall include all investigations necessary to ensure compliance with 3005(c)(3), MHWMR 264.101, 264.552, and 270.32(b)(2). The Permittee shall implement corrective actions beyond the facility boundary, as set forth in Condition V.A.5.

- V.G.1.c. The Executive Director shall either approve or disapprove, in writing, the CMS Work Plan. If the Executive Director disapproves the CMS Work Plan, the Executive Director shall either (1) notify the Permittee in writing of the CMS Work Plan's deficiencies and specify a due date for submittal of a revised CMS Work Plan, (2) revise the CMS Work Plan and notify the Permittee of the revisions, or (3) conditionally approve the CMS Work Plan and notify the Permittee of the conditions. This modified CMS Work Plan becomes the approved CMS Work Plan.

V.G.2. Corrective Measures Study Implementation

The Permittee shall begin to implement the Corrective Measures Study according to the schedules specified in the CMS Work Plan, no later than fifteen (15) calendar days after the Permittee has received written approval from the Executive Director for the CMS Work Plan. Pursuant to Permit Condition V.G.1.b. the CMS shall be conducted in accordance with the approved CMS Work Plan.

V.G.3. CMS Report

- V.G.3.a. The Permittee shall prepare and submit to the Executive Director a draft and final CMS Report for the study conducted pursuant to the approved CMS Work Plan. The draft CMS Report shall be submitted to the Executive Director in accordance with the schedule in the approved CMS Work Plan. The final CMS Report shall be submitted to the Executive Director within thirty (30) days of receipt of the Executive Director's final comments on the draft CMS Report. The CMS Report shall summarize any bench-scale or pilot tests conducted. The CMS Report must include an evaluation of each remedial alternative. If a remedial alternative requires the use of a CAMU, the CMS report shall include all information necessary to establish and implement the CAMU. The CMS Report shall present all information

gathered under the approved CMS Work Plan. The CMS Final Report must contain adequate information to support the Executive Director's decision on the recommended remedy, described under Permit Condition V.H.

V.G.3.b. If the Executive Director determines that the CMS Final Report does not fully satisfy the information requirements specified under Permit Condition V.G.3.a., the Executive Director may disapprove the CMS Final Report. If the Executive Director disapproves the CMS Final Report, the Executive Director shall notify the Permittee in writing of deficiencies in the CMS Final Report and specify a due date for submittal of a revised CMS Final Report. The Executive Director will notify the Permittee of any no further action decision.

V.G.3.c. As specified under Permit Condition V.G.3.b., based on preliminary results and the CMS Final Report, the Executive Director may require the Permittee to evaluate additional remedies or particular elements of one or more proposed remedies.

V.H. REMEDY APPROVAL AND PERMIT MODIFICATION

V.H.1. A remedy shall be selected from the remedial alternatives evaluated in the CMS. It will be based at a minimum on protection of human health and the environment, as per specific site conditions, existing regulations, and guidance. The selected remedy may include any interim measures implemented to date.

V.H.2. Pursuant to MHWMR 270.41, a permit modification will be initiated by the Executive Director after recommendation of a remedy under Condition V.H.1. This modification will serve to incorporate a final remedy, including a CAMU if necessary, into this permit.

V.H.3. Within one hundred and twenty (120) calendar days after this Permit has been modified for remedy selection, the Permittee shall demonstrate financial assurance for completing the approved remedy.

V.I. MODIFICATION OF THE CORRECTIVE ACTION SCHEDULE OF COMPLIANCE

- V.I.1. If at any time the Executive Director determines that modification of the Corrective Action Schedule of Compliance is necessary, the Executive Director may initiate a modification to the Schedule of Compliance (Permit Attachment J).
- V.I.2. Modifications that are initiated and finalized by the Executive Director will be in accordance with the applicable provisions of MHWMR Part 270. The Permittee may also request a permit modification in accordance with MHWMR Part 270 to change the Schedule of Compliance.

V.J. WORK PLAN AND REPORT REQUIREMENTS

- V.J.1. All work plans and schedules shall be subject to approval by the Executive Director prior to implementation to assure that such work plans and schedules are consistent with the requirements of this Permit and with applicable regulations and guidance. The Permittee shall revise all submittals and schedules as specified by the Executive Director. Upon approval the Permittee shall implement all work plans and schedules as written.
- V.J.2. All work plans and reports shall be submitted in accordance with the approved schedule. Extensions of the due date for submittals may be granted by the Executive Director based on the Permittee's demonstration that sufficient justification for the extension exists.
- V.J.3. If the Permittee at any time determines that the SAR information required under Condition V.B., the CS Work Plan under Condition V.D., or RFI Work Plan(s) required under Condition V.E. no longer satisfy the requirements of MHWMR 264.101 or this permit for prior or continuing releases of hazardous waste or hazardous constituents from solid waste management units and/or areas of concern, the Permittee shall submit an amended Work Plan(s) to the Executive Director within ninety (90) calendar days of such determination.
- V.J.4. All reports shall be signed and certified in accordance with MHWMR 270.11.
- V.J.5. One (1) copy of all reports and work plans shall be provided by the Permittee to the Executive Director in care of the Environmental Permits Division Chief at the following address:

Mississippi Department of Environmental Quality
2380 Highway 80 West
P. O. Box 10385
Jackson, Mississippi 39289-0385

V.K. APPROVAL/DISAPPROVAL OF SUBMITTALS

V.K.1. The Executive Director will review the work plans, reports, schedules, and other documents ("submittals") which require the Executive Director's approval in accordance with the conditions of this permit. The Executive Director will notify the Permittee in writing of any submittal that is disapproved, and the basis therefore. Condition V.L. shall apply only to submittals that have been disapproved and revised by the Executive Director, or that have been disapproved by the Executive Director, then revised and resubmitted by the Permittee, and again disapproved by the Executive Director.

V.L. DISPUTE RESOLUTION

Notwithstanding any other provision in this permit, in the event the Permittee disagrees, in whole or in part, with the Executive Director's revision of a submittal or disapproval of any revised submittal required by the permit, the following may, at the Permittee's discretion apply:

- V.L.1.a. In the event that the Permittee chooses to invoke the provisions of this section, the Permittee shall notify the Executive Director in writing within thirty (30) days of receipt of the Executive Director's revision of a submittal or disapproval of a revised submittal. Such notice shall set forth the specific matters in dispute, the position the Permittee asserts should be adopted as consistent with the requirements of the permit, the basis for the Permittee's position, and any matters considered necessary for the Executive Director's determination.
- V.L.1.b. The Executive Director and the Permittee shall have an additional thirty (30) days from EPA's receipt of the notification provided for in Condition V.L.1.a. to meet or confer to resolve any disagreement.
- V.L.1.c. In the event agreement is reached, the Permittee shall submit the revised submittal and implement the same in accordance with and within the time frame specified in such agreement.

- V.L.1.d. If agreement is not reached within the thirty (30) day period, the Executive Director will notify the Permittee in writing of his/her decision on the dispute, and the Permittee shall comply with the terms and conditions of the Executive Director's decision in the dispute. For the purposes of this provision in this permit, the responsibility for making this decision shall not be delegated below the Waste Management Division Director.
- V.L.1.e. With the exception of those conditions under dispute, the Permittee shall proceed to take any action required by those portions of the submission and of the permit that the Executive Director determines are not affected by the dispute.

MODULE VI - LAND DISPOSAL RESTRICTIONS

VI.A. GENERAL RESTRICTIONS

MHWMR Part 268 identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances which an otherwise prohibited waste may continue to be placed on or in a land treatment, storage, or disposal unit. The Permittee shall maintain compliance with the requirements of MHWMR Part 268. Where the Permittee has applied for an extension, waiver, or variance under MHWMR Part 268, the Permittee shall comply with all restrictions on land disposal under this Module once the effective date for the waste has been reached pending final approval of such application.

VI.B. LAND DISPOSAL PROHIBITIONS AND TREATMENT STANDARDS

- VI.B.1. A restricted waste identified in MHWMR Part 268 Subpart C may not be placed in a land disposal unit without further treatment unless the requirements of MHWMR Part 268 Subparts C and/or D are met.
- VI.B.2. The storage of hazardous waste restricted from land disposal under MHWMR Part 268 is prohibited unless the requirements of MHWMR Part 268 Subpart E are met.

VI.C. EXEMPTIONS

- VI.C.1. Placement of remediation wastes into or within a Corrective Action Management Unit (CAMU) in accordance with the conditions established in MHWMR Part 264 Subpart S does not constitute land disposal of hazardous waste.
- VI.C.2. Consolidation or placement of remediation wastes into or within a CAMU does not constitute creation of a unit subject to minimum technology requirements.

MODULE VII - WASTE MINIMIZATION

VII.A. APPLICABILITY

VII.A.1. Pursuant to MHWMR 264.73(b)(9); Section 3005(h) of RCRA, 42 U. S. C. 6925(h); and Section 49-31-1 et seq., Mississippi Code of 1972; the Permittee must certify, no less than annually, that:

VII.A.1.a. The Permittee has a program in place to reduce the volume and toxicity of hazardous waste generated to the degree determined by the Permittee to be economically practicable; and

VII.A.1.b. The proposed method of treatment, storage, or disposal is the most practical method available to the Permittee which minimizes the present and future threat to human health and the environment.

VII.A.2. Wastes generated as a result of site remediation or corrective action are not subject to the requirements of this module.

VII.B. SCOPE

The Waste Minimization program under Condition VII.A. should address the objectives in Attachment F.

VII.C. RECORDKEEPING AND REPORTING

VII.C.1. Annually, the Permittee shall submit a certification report of the types and quantities of waste generated, and the types and quantities of waste reduced/minimized. This certified report shall include a narrative study explaining the waste generation and minimization data, a description of goals and progress made in reducing/minimizing the generation of wastes, and a description of any impediments to the reduction and minimization of waste.

VII.C.2. The Permittee shall maintain copies of this certification in the facility operating record as required by Condition II.J. of this permit.

MODULE VIII - RCRA ORGANIC AIR EMISSION REQUIREMENTS**VIII.A. PROCESS VENTS**

- VIII.A.1. MHWMR Part 264, Subpart AA contains emission standards for process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations that process hazardous waste with an annual average total organic concentration of at least ten (10) parts per million (ppm) by weight, except as provided for in MHWMR 264.1 and 264.1034 (d) and (e).
- VIII.A.2. The conditions of this Condition apply to hazardous waste management units identified below and in Attachment B for which required control equipment has been installed or are exempt from MHWMR Part 264 Subpart AA standards.

Hazardous Waste Management Units (HWMUs) for which MHWMR Part 264 Subpart AA Emissions Controls are Required and/or Installed		
HWMU Identification Number	HWMU Type	Description of Air Emission Control System
There are currently no hazardous waste management units for which MHWMR Part 264 Subpart AA emissions controls are either required to be installed or are presently installed.		

- VIII.A.3. Prior to constructing any equipment with process vents subject to the requirements of MHWMR 264, Subpart AA, the Permittee shall apply for a permit modification under MHWMR 270.42, and provide specific Part B application information required under MHWMR 270.14 through 270.17 and 270.24, as applicable, with the modification request.

VIII.B. EQUIPMENT LEAKS

- VIII.B.1. MHWMR Part 264, Subpart BB contains emission standards that address leaks from specific equipment (i.e. pumps, valves, compressors, etc.) that contains or contacts hazardous waste that has an organic concentration of at least ten (10) percent by weight, except as provided for in MHWMR 264.1, 264.1064(k), or 264.1050(e).
- VIII.B.2. The conditions of this Module apply to hazardous waste management units identified below and in Attachment B for which required control equipment has been installed or are exempt from MHWMR Part 264 Subpart BB standards.

Hazardous Waste Management Units (HWMUs) for which MHWMR Part 264 Subpart BB Emissions Controls are Required and/or Installed		
HWMU Identification Number	HWMU Type	Description of Air Emission Control System
There are currently no hazardous waste management units for which MHWMR Part 264 Subpart BB emissions controls are either required to be installed or are presently installed.		

- VIII.B.3. Prior to constructing or installing any equipment subject to the requirements of MHWMR 264, Subpart BB, the Permittee shall apply for a permit modification under MHWMR 270.42, and provide specific Part B application information required under MHWMR 270.14 through 270.17 and 270.25, as applicable, with the modification request.

VIII.C. TANKS, SURFACE IMPOUNDMENTS, OR CONTAINERS

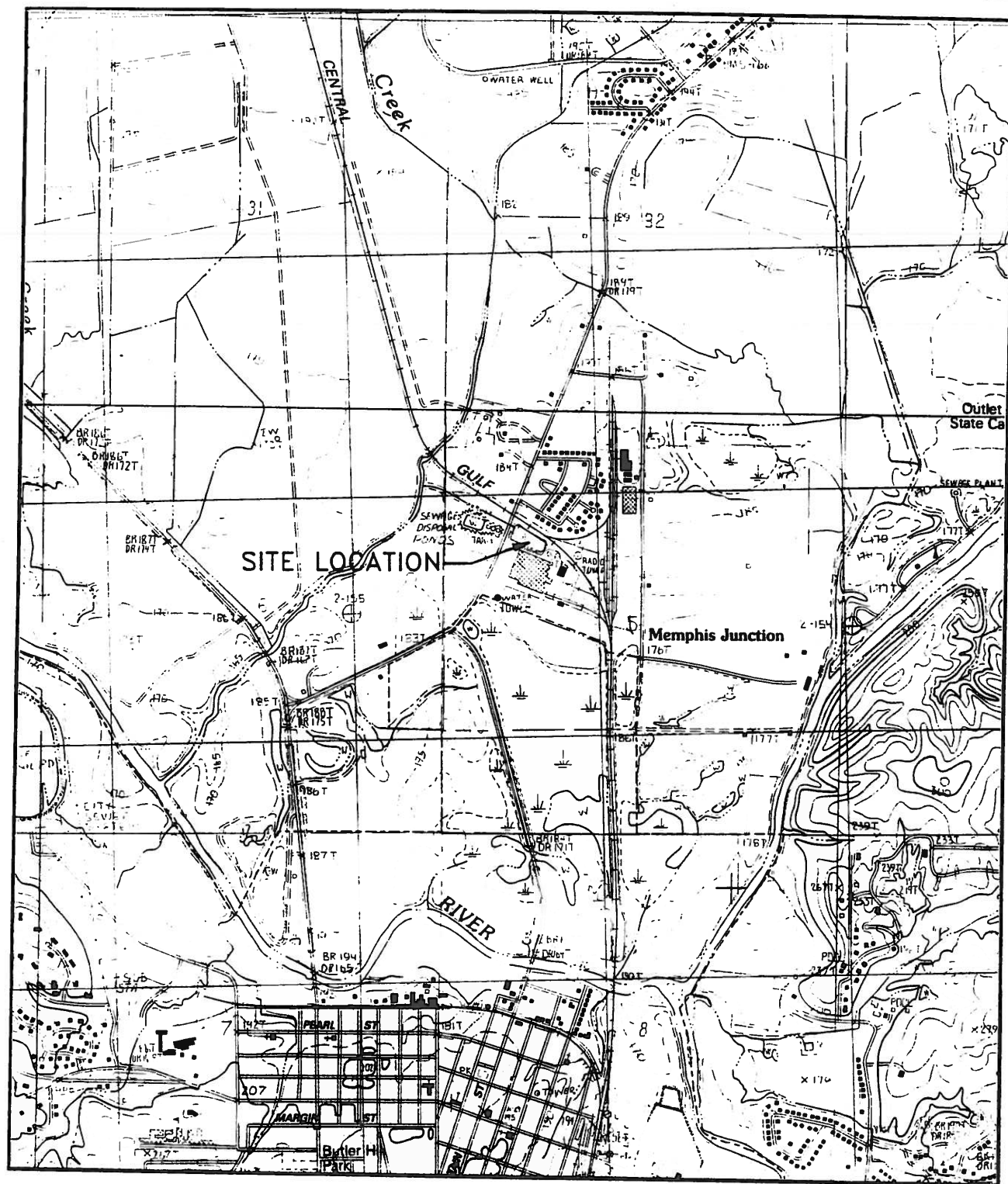
- VIII.C.1. MHWMR Part 264 Subpart CC applies to all tanks, containers, and surface impoundments identified in this Permit, except as provided for in MHWMR 264.1 and 264.1080(b).

- VIII.C.2. The conditions of this Module apply to hazardous waste management units identified below and in Attachment B for which required control equipment has been installed or are exempt from MHWMR Part 264 Subpart CC standards under MHWMR 264.1082(c).

Hazardous Waste Management Units (HWMUs) for which MHWMR Part 264 Subpart CC Emissions Controls are Required and/or Installed		
HWMU Identification Number	HWMU Type	Description of Air Emission Control System
There are currently no hazardous waste management units for which MHWMR Part 264 Subpart CC emissions controls are either required to be installed or are presently installed. The surface impoundment is a closed unit.		

- VIII.C.3. Prior to installing any tank, container, surface impoundment or miscellaneous unit subject to MHWMR Part 264, Subpart CC, or modifying an existing process, waste handling activity, or tank or container such that the unit(s) will become subject to MHWMR Part 264 Subpart CC, the Permittee shall apply for a permit modification under MHWMR 270.42, and provide specific Part B application information required under MHWMR 270.14 through 270.17 and 270.27, as applicable, with the modification request.

ATTACHMENT A
FIGURES AND TABLES



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SCALE IN FEET



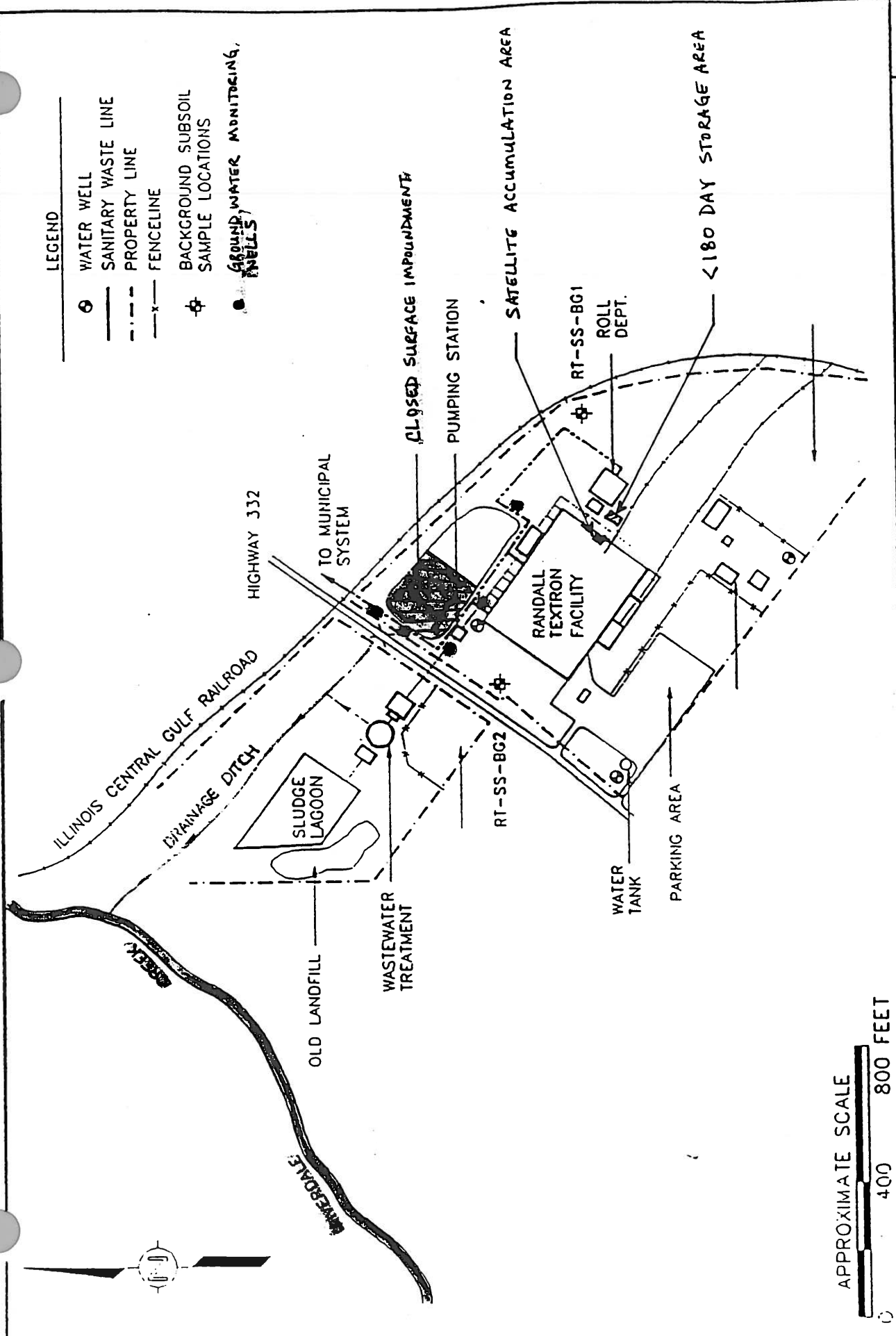
SECOR
INTERNATIONAL
INCORPORATED

PREPARED FOR

RANDALL TEXTRON

SITE LOCATION MAP
RANDALL TEXTRON PLANT
GRENADA, MISSISSIPPI

CADD FILE NO.	CADD DATE
-	12-5-94
SCALE, 1" = 2000'	
PROJECT NO.	
R0010-000-02	
FIGURE NO.	REV. PG. NO.
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RANDALL TEXTRON FACILITY
GRENADA, MISSISSIPPI

FIGURE 2

FACILITY MAP



LEGEND

- EXISTING MONITORING WELL
- x-x- FENCE LINE
- +-+ RAILROAD
- 172- POTENTIOMETRIC SURFACE ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION

ILLINOIS CENTRAL AND GULF RAILROAD

EQUALIZATION BASIN

RANDALL TEXTRON PLANT

HIGHWAY #352

RAW WASTE
PUMP STATION

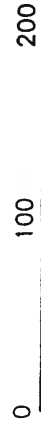
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APPROXIMATE SCALE IN FEET

DESIGNED BY -	SECOR INTERNATIONAL INCORPORATED	PREPARED FOR RANDALL TEXTRON	POTENTIOMETRIC SURFACE MAP - JUNE 1992 GRENADA, MISSISSIPPI	CADD FILE NO R0100102D	CADD DATE 12-5-94
DRAWN BY C.L.				SCALE 1" = 100'	
CHECKED BY O.G.				PROJECT NO. R0010-001-02	
APPROVED BY O.G.				FIGURE 3	REV 0
DATE 12-5-94					

ATTACHMENT B
FACILITY DESCRIPTION

GENERAL FACILITY INFORMATION

FACILITY DESCRIPTION AND HISTORY

The Randall-Textron manufacturing facility is located at 635 Highway 332 East, in Grenada, Mississippi. The facility is situated at a latitude of 33° 48' 16" and a Longitude of 89° 47' 30". A railroad line crosses the north and east portions of the property while rural and wetland areas exist to the south, west and east of the site. Riverdale Creek borders the northwest section of the site, the creek empties into the Yalobusha River, approximately one mile downstream. Refer to Figure 1 located at the end of this section for the site location.

The facility was constructed in 1960 by Lyons, Inc., and was put into service at this time. In 1966, the facility was purchased by North American Rockwell (Rockwell International). Randall-Textron purchased the site in July, 1985.

EQUALIZATION LAGOON DESCRIPTION

Prior to closure, the Equalization Lagoon measured approximately 525 feet long by 225 feet wide, with a depth of approximately ten feet. The approximate capacity of the unit was 2,500,000 gallons. The Equalization Lagoon was constructed with seven influent pipes from the facility. Further, two effluent pipes were constructed into the basin. One effluent pipe discharged to the on-site wastewater treatment system while the other effluent pipe served as the overflow outfall line.

The Equalization Lagoon was designed to handle a maximum flow of 500,000 gallons per day.

The actual flow to the basin was approximately 360,000 gallons per day. Approximately 70 percent of this flow came from the Butler wash and buff wash operations. The remainder of the flow was comprised of wastewater from the roll department, boil-off, chrome electroplating and boiler operations. The wastewater influent to the lagoon remained essentially unchanged until July 20, 1990. At this time, the wastewater from the chromium electroplating, roll department, and boiler were routed directly to the on-site wastewater treatment facility. This change decreased the amount of wastewater flow to the lagoon by approximately 20 percent, from 360,000 to 287,000 gallons per day.

The Equalization Lagoon was placed into operation in 1960. All wastewater flows from the facility were routed directly to the new wastewater treatment system in July 1991. The Equalization Lagoon was then dewatered by directing the lagoon effluent into the wastewater treatment system. No wastewater flow has entered the lagoon since July 1991, although the Lagoon has received storm water runoff during the entire period of operation.

EQUALIZATION LAGOON CLOSURE ACTIVITIES

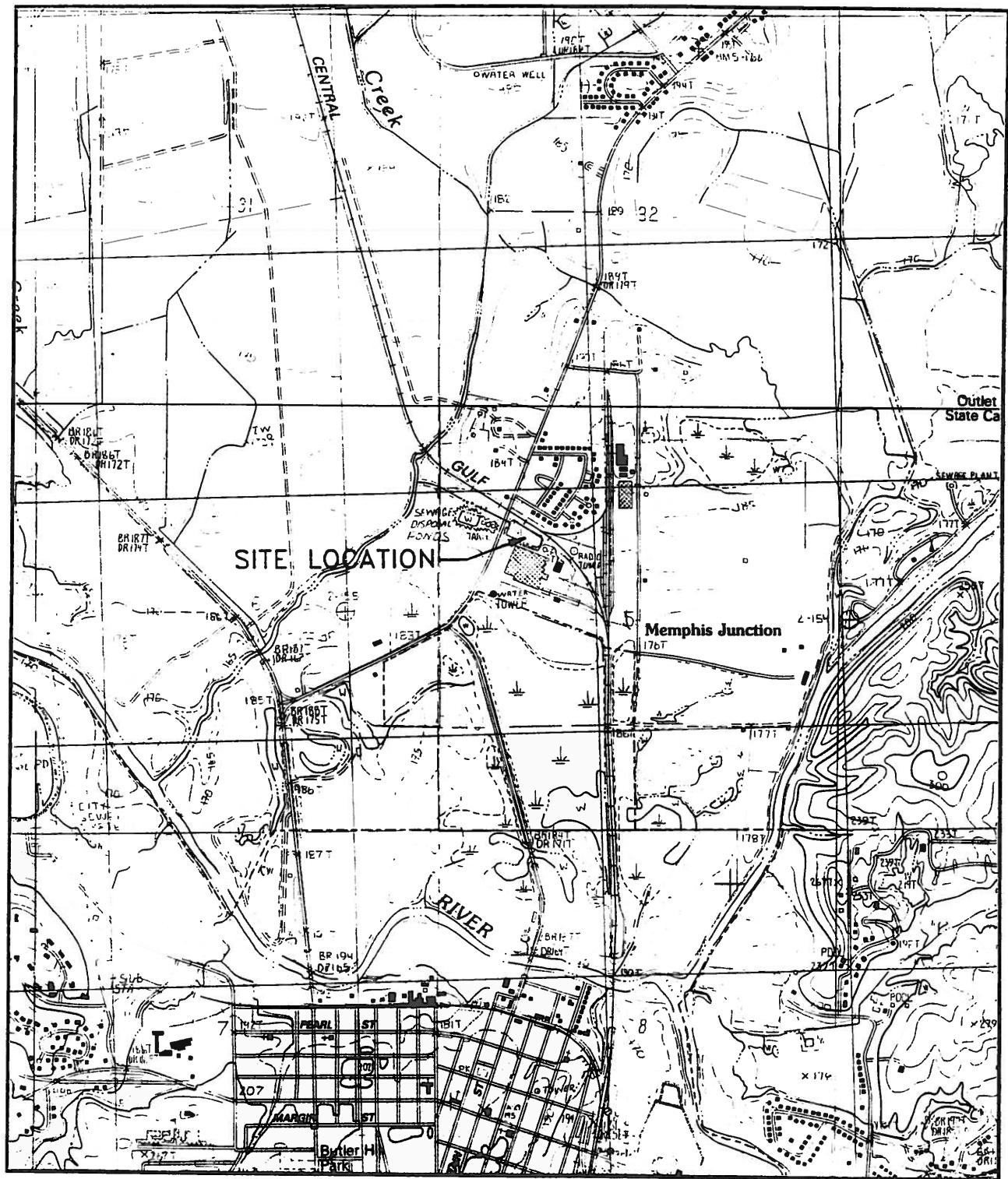
The Equalization Lagoon closure was performed by SECOR in accordance with the approved Modified Closure Plan by isolation and stabilizing the waste sludge, and enclosing the material in a lined, capped cell within the bounds of the former lagoon. These closure activities began in May, 1994. Closure activities included the dewatering of the equalization lagoon and the stabilization of the sludge and soils using pelletized quick lime. Upon completion of the stabilization, the west end of the equalization lagoon was cleared of stabilized sludge and bottom soils to the elevation of the established maximum seasonal water table. The west end was then

backfilled with compacted sand, to an elevation of at least one foot above the established maximum seasonal water table, to serve as a sub-base for the containment cell. The walls of the containment cell were constructed using compacted clay soil. The containment cell was completely lined with a 40 mil. HDPE (high density polyethylene) liner. The stabilized sludge and soils were then carefully placed within the lined containment cell in one foot lifts and compacted to prevent future settling of the waste. The sludge and bottom soils from the east end were excavated to the depth of the established maximum water table. One to two feet of soil was removed from the side walls of the entire perimeter of the equalization lagoon.

Upon completion of the placement of stabilized sludge and soils, the containment cell was capped with a two feet thick low permeability clay soil. This clay cap was compacted in six inch lifts to the required compaction criteria established in the Construction Quality Assurance Plan. Once the required slopes were obtained on the clay cap, the containment cell was covered with a 20 mil. VLDPE (very low density polyethylene) liner. The cover liner was anchored with the bottom liner in a common anchor trench, and the trench filled with compacted clay soil. The cover liner was then covered with geotextile material, prior to placement of drainage sand layer measuring one and a half feet in thickness. A drainage tile was installed around the perimeter of the drainage sand layer as required to drain water contained within the sand from the infiltration through the cover soils. The drainage sand layer was then covered with geotextile and the final cover soil layer constructed to a thickness of two feet.

The east end of the equalization lagoon was backfilled with clay soil to an elevation of at least

one foot above the established maximum seasonal water table. Runon diversion berms were constructed around the east end to prevent site runon from entering the east end depression. Runoff diversion drainage ditches were constructed around the capped containment cell as required to route water away from the cap. The entire site was seeded and mulched to complete the closure construction activities on November 18, 1994. A Closure Report dated December 9, 1994, documenting the closure activities completed by SECOR has been submitted to OPC under separate cover.



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SCALE IN FEET



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INCORPORATED

PREPARED FOR

RANDALL TEXTRON

SITE LOCATION MAP
RANDALL TEXTRON PLANT
GRENADA, MISSISSIPPI

CADD FILE NO.	CADD DATE
-	12-5-94
SCALE, 1" = 2000'	
PROJECT NO. R0010-000-02	
FIGURE NO.	REV. PG. NO.
1	0 -

ATTACHMENT C

QUALITY ASSURANCE PROJECT PLAN (INCLUDES SAMPLING & ANALYSIS PLAN/ GROUNDWATER MONITORING PLAN)

**QUALITY ASSURANCE PROJECT PLAN
(QAPP)
Equalization Lagoon Closure
Grenada, Mississippi**

August 15, 1996

Prepared for:

**Mr. Don Williams
Plant Environmental Coordinator
Textron Automotive Company
635 Highway 332
Grenada, Mississippi 38901**

Submitted to:

**Mr. David Peacock
State of Mississippi
Department of Environmental Quality
Office of Pollution Control
P.O. Box 10385
Jackson, Mississippi 39289-0385**

Prepared by:

**Dale W. Evans, P.E., Chief Engineer
Elizabeth A. Cost, Regulatory Specialist
SECOR International Incorporated (SECOR)
355 Union Boulevard, Suite 200
Lakewood, Colorado 80229-1500**

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FIGURES

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-

APPENDICES

APPENDIX A BORING LOGS

APPENDIX B GROUNDWATER DEPTH AND FLOW DATA

INTRODUCTION

The United States Environmental Protection Agency (U.S. EPA) requires that all environmental monitoring and measurement efforts mandated or supported by U.S. EPA participate in a centrally managed quality assurance (QA) program.

Any party generating data under this program has the responsibility to implement minimum procedures to assure that the precision, accuracy, completeness, and representativeness of its data are known and documented. To ensure the responsibility is met uniformly, each party must prepare a written QA Project Plan (QAPP) covering each project it is to perform.

This QAPP presents the organization, objectives, functional activities and specific Quality Assurance (QA) and Quality Control (QC) activities associated with the Equalization Lagoon Closure for the Textron Automotive Company site located in Grenada, Mississippi. This QAPP also describes the specific protocols which will be followed for sampling, sample handling and storage, chain of custody, and laboratory/field analysis.

All QA/QC procedures will be in accordance with applicable professional technical standards, U.S. EPA requirements, government regulations and guidelines, and specific project goals and requirements. This QAPP is prepared by SECOR International Incorporated (*SECOR*) in accordance with U.S. EPA QAPP guidance documents, in particular, the Contract Laboratory Program (CLP) guidelines, *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans (QAMS-005/80)*, and the Region V Model QAPP (1991).

As noted in this document in Section A.1.4, Data Quality Objectives, and as provided by U.S. EPA guidelines, there are various levels of data requirements that should be applied to a project. The objective of this QAPP is: to provide quality data regarding the Post-Closure Part B Permit activities of the Equalization Lagoon at the Textron Automotive Company facility in Grenada, Mississippi.

1.0 PROJECT DESCRIPTION

1.1 SITE HISTORY/BACKGROUND INFORMATION

The Textron Automotive Company manufacturing facility is located at 635 Highway 332 East, in Grenada, Mississippi. The facility is located at a Latitude of 33°48' 16" and a Longitude of 89°47'30". A railroad line crosses the north and east portions of the property while rural and wetland areas exist to the south, west and east of the site. Riverdale Creek borders the northwest section of the site, and empties into the Yalobusha River approximately one mile downstream. Refer to Figure 1 for the site location.

The facility was constructed in 1960 by Lyons, Inc., and was put into service at that time. In 1966, the facility was purchased by North American Rockwell (Rockwell International). Randall Textron purchased the site in July, 1985. The facility changed divisions in January 1996 and is now Textron Automotive Company.

Prior to closure, the Equalization Lagoon measured approximately 525 feet long by 225 feet wide, with a depth of approximately 10 feet. The approximate capacity of the unit was 2,500,000 gallons. The Equalization Lagoon was constructed with seven influent pipes from the facility, and two effluent pipes in the basin. One effluent pipe discharged to the on-site wastewater treatment system while the other effluent pipe served as the overflow outfall line.

The Equalization Lagoon was designed to handle a maximum flow of 500,000 gallons per day. Actual flow averaged approximately 360,00 gallons per day. The majority ($\approx 70\%$) of this flow came from the Butler wash and buff operations. The remaining flow was comprised of wastewater from the roll department, boil-off, chrome electroplating and boiler operations. The wastewater influent to the lagoon remained essentially unchanged until July 20, 1990. At that time the wastewaters from the chromium electroplating, roll department and boiler ($\approx 20\%$) were routed directly to the wastewater treatment system.

In July, 1991 all wastewaters were routed directly to the treatment system. The lagoon was dewatered by directing the remaining lagoon effluent to the treatment system. No wastewater has been discharged into the lagoon since July, 1991. Stormwater runoff has entered the lagoon and been directed to treatment.

In May, 1994 *SECOR* began lagoon closure activities according to the approved Modified Closure Plan by isolating and stabilizing the waste sludge and soils using pelletized quick lime, and enclosing the material in a lined, capped cell within the bounds of the former lagoon. The entire site was seeded and mulched to complete the closure construction activities on November 19, 1994. A Closure Report dated December 9, 1994, documenting the closure activities was submitted to the State of Mississippi's Office of Pollution Control.

1.2 PAST DATA COLLECTION ACTIVITY/CURRENT STATUS

A summary of past site data collected from the sludge and subsoils in the lagoon as well as water quality from the monitoring wells in the vicinity of the lagoon are provided in Table 1.1.

The closed lagoon site is currently inactive, no groundwater monitoring is being conducted.

TABLE 1.1
TEXTRON AUTOMOTIVE COMPANY SITE
1992-1994 DATA SUMMARY-ORGANIC CONCENTRATION RANGES

Chemical	Sludge (ppm)	Subsoil (ppm)	Monitoring Well RT-1 (µg/L)	Monitoring Well RT-2 (µg/L)	Monitoring Well RT-5 (µg/L)	Monitoring Well RT-4 (µg/L)
Benzene	ND	ND	<5.0	<5000	<250	<250
1,1-Dichloroethane	ND	ND	<5.0	<5000	<250	<250
<i>t</i> -1,2-Dichloroethene	DNA	DNA	<5.0-5.8	2600-5700	<50-5200	3000-5400
<i>c</i> -1,2-Dichloroethene	DNA	DNA	<5.0	<5000	<5000	<250
Ethylbenzene	0.40-0.98	ND	<5.0	<5000	<5000	<250
Methylene Chloride	0.29-1.4	0.006-3.4	<5.0	<5000	<5000	<250
Tetrachloroethene	ND	ND	<5.0	<5000	<5000	<250
1,1,2-Trichloroethane	ND	ND	<5.0	<5000	<5000	<250
Trichloroethene	0.87-9,500	ND-82	87-170	53000-13000	290-860	4900-9400
Toluene	0.81-110	ND-1.3	<5.0	<5000	<5000	<250
Vinyl Chloride	ND-490	ND	<10.0	<5000	<5000	<250
Xylenes (total)	1.2-2.7	ND	DNA	DNA	DNA	DNA
1,2-Dichloroethene	1.7-6,500	ND-8.1	DNA	DNA	DNA	DNA
1,1,1-Trichloroethane	ND	ND	<5.0	<5000	<5000	<250
Chloroethane	ND	ND	<10	<10000	<10000	<500
Chloromethane	ND	ND	<10	<10000	<10000	<500
Chloroform	ND	ND	<5.0	<5000	<5000	<250
Styrene	ND	ND	DNA	DNA	DNA	DNA
1,1,2,2-Tetrachloroethane	ND	ND	<5.0	<5000	<5000	<250
1,1-Dichloroethene	ND	ND	<5.0	<5000	<5000	<250

TABLE 1.2 TEXTRON AUTOMOTIVE COMPANY SITE 1992-1994 DATA SUMMARY-METAL CONCENTRATION RANGES						
Chemical	Sludge (ppm)	Subsoil (ppm)	Monitoring Well RT-1 (mg/L)	Monitoring Well RT-2 (mg/L)	Monitoring Well RT-5 (mg/L)	Monitoring Well RT-4 (mg/L)
Arsenic	0.71-2.1	1.1-7.0	<0.010-0.12	<0.010-0.44	<0.010-0.023	<0.010-0.045
Barium	401-2,060	45.8-111	0.062-0.23	0.062-0.28	0.017-0.43	0.11-0.35
Cadmium	ND	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chromium	19,200- 55,000	11.2-196	0.013-0.098	41-55	0.021-0.11	<0.010-0.058
Lead	104-638	ND-12.3	<0.005-0.022	<0.005-0.067	0.0056-0.032	<0.005-0.019
Mercury	ND	ND	<0.00020	<0.00020	<0.00020	<0.00020
Selenium	ND	ND	<0.050	<0.020	<0.050	<0.010
Silver	ND-2.6	ND	<0.010	<0.010	<0.010	<0.010

1.3 PROJECT OBJECTIVES AND SCOPE

The purpose of this monitoring program is to demonstrate the effectiveness of the Equalization Lagoon Closure over the next thirty years as required by RCRA standards.

In order to achieve this goal testing is required to ensure the appropriate performance and design of the constructed cell unit. The process of testing requires multiple sampling and analysis to provide data allowing statistical evaluation of the impact, if any, of the closure. The data quality objectives during testing are not as stringent as those required for verification of cleanup, as shown in Section A.1.4, Data Quality Objectives.

1.4 DATA QUALITY OBJECTIVES

DQOs are qualitative and quantitative statements which specify the quality of the data required to support decisions made during closure activities and are based on the end uses of the data to be collected. As such, different data uses may require different levels of data quality. There are five analytical levels which address various data uses and the QA/QC effort and methods required to achieve the desired level of quality. These levels are:

- **Screening** (DQO Level 1): This provides the lowest data quality but the most rapid results. It is often used for health and safety monitoring at the site, preliminary comparison to ARARs, initial site characterization to locate areas for subsequent and more accurate analyses, and for engineering screening of alternatives (bench-scale tests). These types of data include those generated on-site through the use of HNu, pH, conductivity, and other real-time monitoring equipment at the site.
- **Field Analyses** (DQO Level 2): This provides rapid results and better quality than in Level 1. This level may include mobile laboratory or field gas chromatography generated data depending on the level of quality control exercised. There will be no DQO Level 2 samples collected.
- **Engineering** (DQO Level 3): This provides an intermediate level of data quality and is used for site characterization. Engineering analyses may include mobile laboratory or field gas chromatography generated data and some analytical laboratory methods (e.g., laboratory data with quick turnaround used for screening but without full quality control documentation). Analysis for VOCs in water and soil (if required) water will utilize analytical detection limits in accordance with those shown in Table 3.1. Analyses for inorganic compounds will utilize analytical detection limits in accordance with those shown in Table 3.2. These analyses will be validated at DQO Level 3.
- **Confirmational** (DQO Level 4): This provides the highest level of data quality and is used, for example, for purposes of risk assessment. These analyses require data validation procedures in accordance with EPA recognized protocols, approved analytical methods and analytical detection limits. DQO Level 4 data will not be required for this project.

- **Non-Standard** (DQO Level 5): This refers to analyses by non-standard protocols, for example, when exacting detection limits or analysis of an unusual chemical compound is required. These analyses often require method development or adaptation. The level of quality control is usually similar to DQO Level 4 data. No sampling or analysis for this project will use DQO 5.

1.5 SAMPLING NETWORK DESIGN AND RATIONAL

The site geology and hydrogeology are important factors since they influence groundwater migration and the fate and transport of chemical constituents.

The geology of the site was evaluated when five monitoring wells were installed around the Equalization Lagoon during December, 1991 and March, 1992. Lithologic descriptions shown on the boring logs indicate that clayey or silty soils exist from the ground surface to a varying depth between 5 and 6 feet below surface grade (BSG). Underlying the silt and clay layers is a medium grained sand layer. This sand layer extends to a depth of at least 20 feet BSG (the extent of the borings). The boring logs indicate that the shallowest continuous water bearing layer is this sand layer. The above reference boring logs are included in Appendix A of this report.

Groundwater was encountered in the borings between 10 and 16 feet BSG. Groundwater level measurements have been conducted periodically since the installation of the wells. The direction of groundwater flow, based on interpretation of these measurements, is oriented toward the northwest. A summary of these measurements is included in Appendix B of this report.

Given this information the existing groundwater monitoring wells can be identified in relation to their position upgradient or downgradient of the lagoon.

<u>Well Identification</u>	<u>Gradient and Direction from the Lagoon</u>
RT-1	Up and East
RT-2	Cross and South
RT-3	Up and South
RT-4	Down and West
RT-5	Down and North

These wells were sampled monthly for drinking and groundwater quality objectives including volatile organic compounds, indicator parameters and metals. Levels of chromium in the groundwater collected from monitoring

wells located south of the former Equalization Lagoon were shown to exceed the USEPA MCL for chromium (0.1 mg/L), while levels of chromium in the groundwater collected from the downgradient and east wells were shown to be below the USEPA MCL for chromium. All groundwater samples collected from both upgradient and downgradient monitoring wells had levels of TCE exceeding the USEPA MCL for TCE (0.005 mg/L). The highest levels of TCE were detected in the southern wells. Monitoring well RT-1 located upgradient and east demonstrated the lowest TCE levels.

Based upon the above information, Monitoring wells RT-1, RT-2, RT-4 and RT-5 will be used as sampling locations for the requirements of this monitoring program.

Samples will be collected quarterly from each of the four listed wells for the first year of the project. The sampling frequency will drop to twice yearly for the four listed wells for the second through thirtieth years.

The number and types of tests to be undertaken are shown in Table 1.3.

1.6 PROJECT SCHEDULE

Sampling will be initiated in accordance with a schedule agreed upon by Mississippi Department of Environmental Quality and Textron Automotive Company.

TABLE 1.3 TEXTRON AUTOMOTIVE COMPANY SITE SAMPLE MATRIX AND FREQUENCY									
Medium/Area	Activity	Method	DQO Level	Sample No.	Dup. Sample	Field (Rinse) Blanks	Trip Blanks	Matrix Spikes	Notes
Groundwater	VOCs	SW 846 Method 8260	3	4	1	NA	(a)	1	(b)
	RCRA (8) Metals	Method 6010	3	4	1	NA	NA	1	(b)
NOTES (a) 1 Trip blank will be included in each sample cooler submitted to the laboratory for analysis. (b) Duplicates will be selected at random based on field conditions and observations.									

2.0 PROJECT ORGANIZATION AND RESPONSIBILITY

This section provides project organizational responsibilities for Textron Automotive Company site.

2.1 TEXTRON AUTOMOTIVE COMPANY

Textron Automotive Company has overall responsibility for ensuring that the project meets EPA objectives. Textron Automotive Company has designated Mr. Don Williams, Plant Environmental Coordinator, the company contact for this project.

2.2 PROJECT COORDINATOR

The Project Coordinator, on behalf of Textron Automotive Company, has the responsibility for ensuring that the project meets EPA objectives and quality standards. In addition, the Project Coordinator is responsible for technical quality control and project oversight, and will provide the Project/Site Manager with access to corporate management. The Project Coordinator will:

- Oversee project objectives and work plan schedules;
- Establish project policy and procedures to address the specific needs of the project;
- Review and analyze overall task performance with respect to planned requirements and authorizations;
- Approve all external reports (deliverables) before submission to EPA Region IV;
- Ultimately be responsible for the quality of interim and final reports; and
- Represent the project team at meetings and public hearings.

2.3 PROJECT/SITE MANAGER

The Project/Site Manager is responsible for implementing the project and has the authority to commit the resources necessary to meet project objectives and requirements. The Project/Site Manager's primary function is to ensure that technical, financial, and scheduling objectives are achieved successfully. The Project/Site

Manager will report directly to the Project Coordinator and will provide the major point of contact and control for matters concerning the project. The Project/Site Manager will:

- Define project objectives and develop a detailed Work Plan schedule;
- Establish project policy and procedures to address the specific needs of task objectives;
- Acquire and apply technical and corporate resources as needed to ensure performance within budget and schedule constraints;
- Orient all field leaders and support staff concerning the project's special considerations;
- Monitor and direct the field leaders;
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product;
- Review the work performed on each task to ensure its quality, responsiveness, and timeliness;
- Review and analyze overall task performance with respect to planned requirements and authorizations;
- Ultimately be responsible for the preparation and quality of interim and final reports;
- Represent the project team at meetings;
- Coordination and management of field staff including sampling, drilling, and field laboratory staff;
- Implementation of QC for technical data provided by the field staff including field measurement data;
- Adherence to work schedules;
- Authorship, review, and approval of text and graphics required for field team efforts;
- Coordination and oversight of technical efforts of subcontractors assisting the field team; and
- Identification of problems at the field team level, discussion of resolutions with the Site Manager, and provision of communication between team and upper management.

2.4 TECHNICAL STAFF

The technical staff (team members) for this project may be drawn from *SECOR*'s pool of regional and corporate resources. The technical team staff will be utilized to gather and analyze data, and to prepare various task reports and support materials. All of the designated technical team members are experienced professionals who possess the degree of specialization and technical competence required to effectively and efficiently perform the required work.

2.5 QA/QC DIRECTOR

The QA/QC Director will remain independent of direct job involvement and day-to-day operations, and has direct access to corporate executive staff as necessary to resolve any QA dispute. He is responsible for auditing the implementation of the QA program in conformance with the demands of specific investigations, policies, and EPA requirements. Specific functions and duties include:

- Provide QA audit on various phases of the field operations;
- Review and approval of QA plans and procedures;
- Provide QA technical assistance to project staff;
- Report on the adequacy, status, and effectiveness of the QA program on a regular basis to the program manager and executive vice president for technical operations.

Responsibilities for additional aspects of the project are as follows:

- **Laboratory Project Manager**
 - Ensures all resources of the laboratory are available on an as-required basis;
 - Overview of final analytical reports; and
 - Approval of QAPP.

- **Laboratory Operations Manager**

- Coordinates laboratory analyses;
- Supervises in-house chain-of-custody;
- Schedules samples analyses;
- Oversees data review;
- Oversees preparation of analytical reports; and
- Approves final analytical reports prior to submission to the Project Manager.

- **Laboratory Quality Assurance Officer**

- Overview laboratory quality assurance;
- Overview QA/QC documentation;
- Conduct detailed data review;
- Decides laboratory corrective actions, if required;
- Technical representation of laboratory QA procedures;
- Preparation of laboratory Standard Operation Procedures; and
- Approval of QAPP.

- **Laboratory Sample Custodian**

- Receive and inspect the incoming sample containers;
- Record the condition of the incoming sample containers;
- Sign appropriate documents;
- Verify chain-of-custody and its correctness;
- Notify laboratory manager and laboratory supervisor of sample receipt and inspection;
- Assign a unique identification number and customer number, and enter each into the sample receiving log;
- With the help of the laboratory manager, initiate transfer of the samples to appropriate laboratory sections; and
- Control and monitor access/storage of samples and extracts.

3.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

The overall QA objective is to develop and implement procedures for field sampling, chain-of-custody, laboratory analysis, and reporting that will provide results that achieve the goals of the project and are legally defensible in a court of law. Specific procedures for sampling, chain of custody, laboratory instruments calibration, laboratory analysis, reporting of data, internal quality control, audits, preventive maintenance of field equipment, and corrective action are described in other sections of this QAPP. The purpose of this section is to address the specific objectives for accuracy, precision, completeness, representativeness, and comparability. Each of these terms are explained and discussed in the following sections.

3.1 LEVEL OF QUALITY CONTROL EFFORT

Field blank, trip blank, duplicate and matrix spike samples will be analyzed to assess the quality of the data resulting from the field sampling program. Field and trip blanks, consisting of distilled or deionized (DI) water, will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field sampling program. Field blank samples are analyzed to check for procedural contamination at the site which may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage. Duplicate samples are analyzed to check for sampling and analytical reproducibility. Matrix spikes provide information about the effect of the sample matrix on the digestion and measurement methodology. All matrix spikes are performed in duplicate and are hereinafter referred to as MS/MSD samples. One matrix spike/matrix spike duplicate will be collected for every 4 or fewer investigative samples. MS/MSD samples are designated/collected for organic analyses only.

The general level of the QC effort will be one field duplicate and one field blank for every sampling event. One VOC trip blank consisting of distilled deionized or DI water will be included along with each shipment of aqueous VOC samples.

MS/MSD samples are investigative samples. Soil MS/MSD samples require no extra volume for VOCs or extractable organics. However, aqueous MS/MSD samples must be collected at triple the volume for VOCs and double the volume for extractable organics. One MS/MSD sample will be collected/designated for every sample event and matrix type. (i.e., groundwater, soil). The number of duplicate and field blank samples to be collected

are listed in Table 1.3. Sampling procedures are specified in the Sampling and Analysis Plan section of this document.

All groundwater samples will be sent to a certified laboratory. The analysis will be according to the specified protocols for organics and inorganics. The level of QC effort provided by the laboratory will be equivalent to the level of QC effort specified under the CLP program for Routine Analytical Services (RAS) parameters to be tested. The level of QC effort for analysis of organics and inorganics will conform to DQO Level 3. Quantitation limits for volatile organic compounds in water for the groundwater sampling are provided in Table 3.1 and quantitation limits for inorganics in water are provided in Table 3.2.

3.2 ACCURACY, PRECISION, AND SENSITIVITY OF ANALYSIS

The fundamental QA objective with respect to accuracy, precision, and sensitivity of laboratory analytical data is to achieve the QC acceptance criteria of the analytical protocols. The level of QC effort for analysis of volatile organics will conform to the protocols of SW846 Method 8260 for water and 6010 for metals.

3.3 COMPLETENESS, REPRESENTATIVENESS AND COMPARABILITY

- **COMPLETENESS** is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is expected that the laboratory will provide data meeting QC acceptance criteria for 95 percent or more for all samples tested using methods outlined in Table 1.3. Following completion of the analytical testing, the percent completeness will be calculated by the following equations:

Completeness (%): =

$$\frac{\text{(number of valid data)}}{\text{(number of sample collected for each parameter analyzed)}} \times 100$$

- **REPRESENTATIVENESS** expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Representativeness is a qualitative parameter which is dependent upon the proper design of the sampling program and proper laboratory protocol. The sampling network was designed to provide data representative of site conditions. During development of this network, consideration was given to past waste disposal practices, existing analytical data, physical setting and processes, and constraints inherent to the site. Representativeness will be satisfied by insuring that the Sampling and Analysis Program (SAP) is followed, proper sampling technique are used, proper analytical procedures are followed and holding times of the samples are not exceeded in the laboratory. Representativeness will be assessed by the analysis of field duplicated samples.
- **COMPARABILITY** expresses the confidence with which one data set can be compared with another. The extent to which existing and planned analytical data will be comparable depends on the similarity of sampling and analytical methods. The procedures used to obtain the planned analytical data, as documented in the QAPP, are expected to provide comparable data. These new analytical data, however, may not be directly comparable to existing data because of difference in procedures and QA objectives.

TABLE 3.1
TEXTRON AUTOMOTIVE COMPANY SITE
ORGANIC TARGET ANALYTE LIST (TAL) AND
DETECTION LIMITS

Chemical	Water (µg/L)
Chloromethane	1
Vinyl Chloride	1
Chloroethane	1
Methylene Chloride	1
1,1-Dichloroethene	1
1,1-Dichloroethane	1
1,2-Dichloroethene	1
Chloroform	1
1,2-Dichloroethane	1
1,1,1-Trichloroethane	1
Trichloroethene	1
1,1,2,2-Tetrachloroethane	1
Benzene	1
Tetrachloroethene	1
Toluene	1
1,1,2,2-Tetrachloroethane	1
Chlorobenzene	1
Ethyl Benzene	1
Styrene	1
Xylenes (total)	1

TABLE 3.2
TEXTRON AUTOMOTIVE COMPANY SITE
RCRA METALS TARGET ANALYTE LIST (TAL) AND DETECTION LIMITS

Chemical	Concentration (mg/L)
Arsenic	0.010
Barium	0.010
Cadmium	0.0050
Chromium	0.010
Lead	0.0050
Mercury	0.00020
Selenium	0.010
Silver	0.010

4.0 SAMPLE CUSTODY

It is U.S. EPA and Region IV policy to follow the U.S. EPA sample custody, or chain of custody protocols as described in "NEIC Policies and Procedures", EPA-330/9-78DDI-R, Revised June 1985. This custody is in three parts: Sample collection, Laboratory analysis, and Final evidence files. Final evidence files, including all originals of laboratory reports and purge files, are maintained under document control in a secure area.

A sample or evidence file is under your custody if they:

- Are in your possession;
- Are in your view, after being in your possession;
- Are in your possession and you place them in a secured location; or
- Are in a designated secure area.

4.1 FIELD CHAIN OF CUSTODY PROCEDURES

The sample packaging and shipment procedures summarized below will insure that the samples will arrive at the laboratory with the chain of custody intact.

4.1.1 Field Procedures

- A) The field sampler is personally responsible for the care and custody of the samples until they are transferred or properly dispatched. As few people as possible should handle the samples.
- B) All bottles will be tagged with sample numbers and locations.
- C) Sample tags are to be completed for each sample using waterproof ink unless prohibited by weather conditions. For example, a logbook notation would explain that a pencil was used to fill out the sample tag because the ballpoint pen would not function in freezing weather.

- D) The Project/Site Manager or the QA/QC officer will review all field activities to determine whether proper custody procedures were followed during the field work.

4.1.2 Field Logbooks/Documentation

Field logbook will provide the means of recording data collecting activities performed. As such, entries will be described in as much detail as possible so that persons going to the site could re-construct a particular situation without reliance on memory.

Field logbooks will be bound, field survey books or notebooks. Logbooks will be assigned to field personnel, but will stored in the document control center when not in use. Each logbook will be identified by the project-specific document number.

The title page of each logbook will contain the following:

- Person to whom the logbook is assigned;
- Logbook number;
- Project name;
- Project start date; and
- End date.

Entries into the logbook will contain a variety of information. At the beginning of each entry, the date, start time, weather, names of all sampling team members present, level of personal protection being used, and the signature of the person making the entry will be entered. The names of visitors to the site, field sampling or investigation team personnel and the purpose of their visit will also be recorded in the field logbook.

Measurements made and samples collected will be recorded. All entries will be made in ink and no erasures will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark. Whenever a sample is collected, or a measurement is made, a detailed description of the location of the station, which includes compass and distance measurements, shall be recorded. The number of the photographs taken of the station, if any, will also be noted. All equipment used to make measurements will be identified, along with the date of calibration.

Samples will be collected following the sampling procedures documented in the SAP of this document. The equipment used to collect samples will be noted, along with the time of sampling, sample description, depth at which the sample was collected, volume and number of containers. Sample identification number will be assigned prior to sample collection. Field duplicate samples, which will receive an entirely separate sample identification number, will be noted under sample description.

4.1.3 Transfer of Custody and Shipment Procedures

- A) All samples will be accompanied by a properly completed chain of custody form. The sample numbers and locations will be listed on the chain of custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to a mobile laboratory, to the pertinent laboratory, or to/from a secure storage area.
- B) Samples will be properly packaged for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in each sample box or cooler. Shipping containers will be locked and secured with strapping tape for shipment to the laboratory. The preferred procedure includes use of a custody seal attached to the front right and back left of the cooler. The cooler is strapped shut with strapping tape in at least two locations.
- C) Whenever samples are co-located with a source or government agency, a separate Sample Receipt is prepared for those samples and marked to indicate with whom the samples are being co-located. The person relinquishing the samples to the facility or agency should request the representatives signature acknowledging sample receipt. If the representative is unavailable or refuses, this is noted in the "Received By" space.
- D) All shipments will be accompanied by the Chain of Custody Record identifying the contents. The original record will accompany the shipment, and the pink and yellow copies will be retained by the sampler for returning to the Project/Site Manager.
- E) If the samples are sent by common carrier, a bill of lading should be used. Receipts of bills of lading will be retained as part of the permanent documentation. If sent by mail, the package will be registered with return receipt requested. Commercial carriers are not required to sign off on the custody form as long as the custody forms are sealed inside the sample cooler and the custody seals remain intact.

4.2 LABORATORY CHAIN OF CUSTODY PROCEDURES

The chain of custody procedures for the analyzing laboratory will comply with USEPA CLP protocols.

4.3 FINAL EVIDENCE FILES CUSTODY PROCEDURES

All documentation relative to the Textron Automotive Company monitoring project will be maintained by Textron Automotive Company. Such documentation includes original notes, memoranda, Chain-of-Custody, forms, original laboratory data reports, calculation sheets and notes, and other information generated by the laboratory. The laboratory will maintain all bench sheets and chromatograms. All other notes and preliminary data will be kept in project files at *SECOR*.

5.0 CALIBRATION PROCEDURES AND FREQUENCY

This section describes procedures for maintaining the accuracy of all the instruments and measuring equipment which are used for conducting field tests and laboratory analyses. These instruments and equipment should be calibrated prior to each use or scheduled, periodic basis.

5.1 FIELD INSTRUMENTS/EQUIPMENT

Instruments and equipment used to gather, generate, or measure environmental data will be calibrated with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacturer's specifications.

Equipment to be used doing the field sampling will be examined to certify that it is operating condition. This includes checking the manufacturing's operating manual and the instruction and the instructions for each instrument to ensure that all maintenance requirements are being observed. Field notes from previous sampling trips will be reviewed so that the notation on any prior equipment problem are not overlooked, and all necessary repairs to equipment have been carried out. A spare electrode will be sent with each pH meter to be used for field measurements. Two thermometers will be sent to sampling locations where measurement of temperature is required, including those locations where a specific conductance probe/thermometer is required.

Calibration of field instruments is governed by the specific SOP for the applicable field analysis method, and such procedures take precedence over the following general discussion.

Calibration of field instruments will be performed at the intervals specified by the manufacturer or more frequently as conditions dictate. Field instruments will include a pH meter, thermometer, specific conductivity meter, and OVA or PID. In the event that an internally calibrated field instrument fails to meet calibration/checkout procedures, it will be returned on the manufacturer for service.

The pH meter will be calibrated with standard buffer solutions prior to a field trip. In the field, the meter will be calibrated daily with two buffers before use. Thereafter, the meter will be checked against two buffer solutions will be used for each field trip. Calibration procedures and frequency will be recorded in a field log book along

with the lot numbers of the buffer. A general procedures for pH meter, specific conductivity meter and thermometer are described below:

pH Calibration

- Temperature of sample and buffer should be the same;
- Connect pH electrode into pH meter and turn on pH meter;
- Set temperature setting based on the temperature of buffer; place electrode in first buffer solution;
- After reading has stabilized, adjust "CALIB" knob to display correct value;
- Repeat procedure for second buffer solution;
- Place pH electrode in the sample and record the pH as displayed;
- Remove pH electrode from sample and rinse off with distilled water; and
- The pH meter must be recalibrated every time it is turned off and turned back on, or if it starts giving erratic results.

The calibrations performed, standard used, and sample pH values are to be recorded in the field notebook. Appropriate new batteries will be purchased and kept with the meters to facilitate immediate replacement in the field as necessary.

Temperature Calibration

Temperature measurements are carried out utilizing a thermometer. The thermometers must be inspected before use to ensure there is no mercury separation. The thermometers should be rechecked in the field before and after use to see if the readings are logical and the mercury is still intact. The thermometers should be checked biannually for calibration, by immersing them in a bath of known temperature until equilibrium is reached. They should be discarded if found to have more than 10% error. The reference thermometer used for the bath calibration should be NBS traceable.

Conductivity Meter Calibration

The conductivity cells of the specific conductivity meter will be cleaned and checked against known conductivity standards before each field trip. In the field, the instrument will be checked daily with NBS traceable standards. The calibration procedure is described below.

- Place the probe in conductivity calibration standard solution;
- Set temperature knob for temperature of standard solution;
- Turn to appropriate scale and set the instrument for the value of calibration standard;
- Rinse off the electrode with distilled water;
- Measure the conductivity for distilled water to be used for a field blank, making sure temperature is set correctly for temperature of solution to be tested; and
- If the conductivity of blank (distilled water) is high, it must be discarded and a new blank sample procured.

All readings and calibrations should be recorded in the field notebook.

The OVA will be checked daily by use of the internal calibration mechanism. The PID will be calibrated daily with a gas of known concentration.

5.2 LABORATORY INSTRUMENTS

Calibration of laboratory equipment will be based on approved written procedures. Records of calibration, repairs, or replacement will be filed and maintained by the designated laboratory personnel performing quality control activities. These records will be filed at the location where the work is performed and will be subject to QA audit. For all instruments, the laboratory will maintain a factory-trained repair staff with in-house spare parts or will maintain service contracts with vendors.

The records of calibration will be kept as follows:

- If possible each instrument will have record of calibration permanently affixed with an assigned record number.
- A label will be affixed to each instrument showing description, manufacturer, model numbers, date of last calibration, by whom calibrated (signature), and due date of next calibration reports and compensation or correction figures will be maintained with instrument.
- A written stepwise calibration procedure will be available for each piece of test and measurement equipment.
- Any instrument that is not calibrated to with the manufacturer's original specification will display a warning tag to alert that analyst that the device carrier only a "Limited Calibration".

In all cases where analyses are conducted according to SW846 protocols, the calibration procedures and frequencies specified in the applicable SW846 methods will be followed exactly.

6.0 ANALYTICAL PROCEDURES

All groundwater samples (surface water samples, and soil samples if required) collected during field sampling activities for the Textron Automotive Company Site will be analyzed by a certified laboratory to be determined.

6.1 LABORATORY ANALYSIS

Methods published by U.S. EPA for analyses of Target Compound List (TCL) parameters by CLP protocols which follow methods detailed in the CLP Statement of Work (most current version of SOW/OLM01.9) for organic analyses were considered for analysis of surface water, soil, sediment and groundwater samples. Because the TCL Cleanup/Performance Standards for this site (Table 1.2) are below the CLP Method OLM 01.9 method detection limits for many of the TCL parameters an alternative analytical method has been selected for analysis of TCL parameters in water (SW846 Method 8260). This method provides detection limits in water that are lower than the CLP Method OLM 01.9 for TCL parameters and which meet and/or exceed Mississippi Department of Environmental Quality (MDEQ) drinking water limits for compounds of interest. A specific SOP which meets project required detection limits will be prepared for this analysis.

Each of these SOPs provided, except where noted, is based on analytical methods published by the U.S. EPA. Each SOP is developed in the same manner from its U.S. EPA Method as were the CLP SOWs from their basic methods. Each specified:

- Procedures for sample preparation;
- Instrument start-up and performance check;
- Procedures to establish the actual and required detection limits for each parameter;
- Initial and continuing calibration check requirements;
- Specific methods for each sample matrix type; and
- Required analyses and QC acceptance limits for method blanks, trip blanks (as appropriate), field blanks, matrix spikes, matrix spike duplicates, and laboratory control samples (U.S. EPA or National Bureau of Standards (NBS) reference samples or laboratory prepared blank/spikes).

Table 6.1 summarizes the analyte group and U.S. EPA method from which each SOP is derived, for chemical analyses.

All samples collected for TCL VOCs will be analyzed according to analytical procedures set forth in the U.S. EPA TCL (SW846 Method 8240 and 8260 or most current) for organics analysis. Analysis for VOCs in soil and water will utilize analytical detection limits in accordance with those shown in Table 3.1.

Samples collected for RCRA (8) Metals analysis will be analyzed according to the analytical procedures outlined in EPA Method 6010 for Inductively Coupled Plasma (ICP) Analysis of metals. Analyses for inorganic compounds will utilize analytical detection limits in accordance with those shown in Table 3.2.

TABLE 6.1 TEXTRON AUTOMOTIVE COMPANY SITE NON-CONTRACT LABORATORY PROGRAM ANALYTICAL METHODS			
Analytical Group	Matrix	Method	SOP
Volatile Organic Compounds	Groundwater	SW846 Method 8260	laboratory supplied
RCRA (8) Metals	Water	SW846 Method 6010	"

7.0 INTERNAL QUALITY CONTROL CHECKS

7.1 FIELD SAMPLE COLLECTION

The SAP (section 13) provides for an initial QC check. The assessment of field sampling precision and accuracy will be made through collection of field duplicates and field blanks in accordance with the applicable procedures described in the SAP section of this document.

7.2 FIELD MEASUREMENT

QC procedures for pH, conductivity, and temperature measurements are limited to checking the reproducibility of the measurement by obtaining multiple readings on a single sample or standard and by calibrating the instruments.

7.3 LABORATORY ANALYSIS

Internal Quality Control Checks

Internal quality control procedures for VOC analysis for the certified laboratory will be specified in their QA/QC plan for organics and inorganics, or in the method description of SOPs. These specifications include the types of QC checks required (method blanks, reagent/preparation blanks, matrix spike and matrix spike duplicates, calibration standards, internal standards, surrogate standards, the frequency of each audit, the specific calibration check standards, laboratory duplicate/replicate analysis), compounds and concentrations to be used, and the quality control acceptance criteria for these audits.

8.0 DATA REDUCTION, VALIDATION, AND REPORTING

8.1 FIELD MEASUREMENTS AND SAMPLE COLLECTION

Raw data from field measurements and sample collection activities will be appropriately recorded in the field log book. If the data are to be used in the project reports, they will be reduced or summarized and the method of reduction will be documented in the report.

8.2 LABORATORY SERVICES

The certified laboratory will perform in-house analytical data compilation under the direction of the laboratory QA/QC Director. The laboratory QA/QC Director is responsible for assessing data quality and advising of any data which were rated "preliminary" or "unacceptable" or other notations which would caution the data user of possible unreliability. Data reduction, validation, and reporting by the analytical laboratory will be conducted as follows:

- Raw data produced by the analyst is turned over to the respective area supervisor.
- The area supervisor will review the data for attainment of quality control criteria as outlined in CLP protocols and/or established EPA methods and for overall reasonableness.
- Upon acceptance of the raw data by the area supervisor, a computerized report is generated and sent to the laboratory QA officer.
- The laboratory QA Officer will complete a thorough audit of reports at a frequency of one in ten, and an audit of every report for consistency.
- The laboratory QA Officer and area supervisor will decide whether any sample reanalysis is required.

Data reduction reporting procedures will be those specified by SW846 Method 8240 and 8260 for volatile organic analyses of soil, groundwater, surface water and sediments, and SW846 Method 6010 for RCRA metals analysis of groundwater.

The laboratory will prepare and retain full analytical and QC documentation similar to that required by the Contact Laboratory Program. Such retained documentation need not be hard (paper) copy, but may be in other storage media (e.g., magnetic tape). As needed, the laboratory will supply hard copy of the retained information.

The laboratory will report the data in the same chronological order in which it analyses along with QC data. The laboratory will provide the following information to the Project Manager in each analytical data package submitted:

1. Cover sheets listing the samples included in the report and narrative comments describing problems encountered in analysis.
2. Tabulated results of inorganic and organic compounds identified and quantified.
3. Analytical results for QC sample spikes, sample duplicates, initial and a continuous calibration verifications of standards and blanks, standard procedural blanks, laboratory control samplers and ICP interference check samples.
4. Tabulation of instrument detection limits determined in pure water.

8.3 DATA VALIDATION

Assessment of the analytical information will be accomplished by the joint efforts of the QA/QC Director and Project Manager. The data assessment by the Project Manager will be based on the criteria that the sample was properly collected and handled according to the Sampling and Analysis Plan and Section 5 of this QAPP.

The QA/QC Director will conduct a systematic review of the data for compliance with the established QC criteria based on the spike, duplicate and blank results provided by the laboratory. An evaluation of data accuracy, precision, sensitivity and completeness, based on criteria in Section 11.0 of this QAPP, will be performed and included in the sampling event report.

The Data Review will identify any out-of-control data points and data omissions and interact with the laboratory to correct data deficiencies. Decisions to repeat sample collection and analyses may be made by the Project Manager based on the extent of the deficiencies and their importance in the overall context of the project. Data may be flagged due to the following:

- 1) Concentration below required detection limit;
- 2) Estimated concentration due to poor below required detection limit;
- 3) Estimated concentration due to poor spike recovery; and
- 4) Concentration of chemical also found in laboratory bank.

The QA/QC Director comments will indicate that the data are:

- 1) Usable as a quantitative concentration;
- 2) Usable with caution as an estimated concentration; or
- 3) Unusable due to out-of-control QC results.

9.0 PERFORMANCE AND SYSTEM AUDITS

Performance and system audits of both field and laboratory activities will be conducted to verify that sampling and analysis are performed in accordance with the procedures established in the SAP and QAPP. The audits of field and laboratory activities include two separate independent parts: Internal and External audits.

9.1 FIELD AUDITS

Internal audits of field activities (sampling and measurements) will be conducted by the QA/QC Director, and/or the Field Team Leader. The audits will include examination of field sampling records, field instrument operating records, sample collection, handling and packaging in compliance with the established procedures, maintenance of QA procedures, chain of custody, etc. These audits will occur at the onset of the project to verify that all established procedures are followed. Follow-up audits will be conducted to correct deficiencies, and to verify that QA procedures are maintained throughout the remediation. The audits will involve review of field measurement records, instrumentation calibration records, and sample documentation.

External audits may be conducted by U.S. EPA Region IV, MDEQ and/or Textron Automotive Company's Division Environmental Coordinator.

9.2 LABORATORY AUDITS

The internal performance and system audits of the certified laboratory will be conducted by the QA/QC Director and/or the Project/Site Manager. The system audits, which will be done on an annual basis, will include examination laboratory documentation on sample receiving, sample log-in, sample storage, chain of custody procedure, sample preparation and analysis, instrument operating records, etc. The performance audits will be conducted on a quarterly basis. Blind QC samples will be prepared and submitted along with project samples to the laboratory for analysis throughout the project. The QA/QC Director will evaluate the analytical results of these blind performance samples to ensure the laboratories maintain a good performance.

External performance and system audits of the laboratory selected for the project by Textron Automotive Company for approval/disapproval may be conducted by the U.S. EPA Regional IV, MDEQ or other parties on behalf of EPA Region IV.

10.0 SPECIFIC ROUTINE PROCEDURES TO ASSESS DATA PRECISION, ACCURACY, AND COMPLETENESS

10.1 LABORATORY DATA

Laboratory results will be assessed for compliance with required precision, accuracy, completeness and sensitivity as follows:

10.1.1 Precision

Precision of laboratory analysis will be assessed by comparing the analytical results between matrix spike/matrix spike duplicate (MS/MSD) for organic analysis, and laboratory duplicate analyses for inorganic analysis. The relative percent difference (%RPD) will be calculated for each pair of duplicate analysis using the Equation 10-1.

$$\%RPD = \frac{S - D}{(S + D)/2} \times 100 \quad \text{Equ. 10-1}$$

Where: S = First sample value (original or MS value)
D = Second sample value (duplicate or MSD value)

10.1.2 Accuracy

Accuracy of laboratory results will be assessed for compliance with the established QC criteria that are described in Section III of the QAPP using the analytical results of method blanks, reagent/preparation blank, matrix spike/matrix spike duplicate samples, field blank, and bottle blanks. The percent recovery (%R) of matrix spike samples will be calculated using Equation 10-2.

$$\%R = \frac{A - B}{C} \times 100 \quad \text{Equ. 11-2}$$

Where:

- A = The analyte concentration determined experimentally from the spiked sample;
B = The background level determined by a separate analysis of the unspiked sample and;
C = The amount of the spike added.

10.1.3 Completeness

The data completeness of laboratory analyses results will be assessed for compliance with the amount of data required for decision making. The completeness is calculated using Equation 10-3.

$$\text{Completeness} = \frac{\text{Valid Data Obtained}}{\text{Total Data Planned}} \times 100 \quad \text{Equ. 10-3}$$

10.1.4 Sensitivity

The achievement of method detection limits depend on instrumental sensitivity and matrix effects. Therefore it is important to monitor the instrumental sensitivity to ensure the data quality through constant instrument performance. The instrumental sensitivity will be monitored through the analysis of method blank, calibration check sample, and laboratory control samples, etc.

11.0 CORRECTIVE ACTIONS

Corrective actions may be required for two classes of problems: analytical and equipment problems and noncompliance problems. Analytical and equipment problems may occur during sampling and sample handling, sample preparation, laboratory instrumental analysis, and data review.

For noncompliance problems, a formal corrective action program will be determined and implemented at the time the problem is identified. The person who identifies the problem is responsible for notifying the Project Manager, if the problem is analytical in nature, information on these problems will be promptly communicated to the MDEQ project manager. Implementation of corrective action will be confirmed in writing through the same channels.

Any nonconformance with the established quality control procedures in the QAPP or SAP will be identified and corrected in accordance with the QAPP.

Corrective actions will be implemented and documented in the field record book. No staff member will initiate corrective action without prior communication of findings through the proper channels. If corrective actions are insufficient, work may be stopped by stop-work order by the MDEQ or the Project Coordinator.

11.1 SAMPLE COLLECTION/FIELD MEASUREMENTS

Technical staff and project personnel will be responsible for reporting all suspected technical or QA nonconformances or suspected deficiencies of any activity or issued document by reporting the situation to the Field Leader or designee. This manager will be responsible for assessing the suspected problems in consultation with the Project QA/QC Director on making a decision based on the potential for the situation to impact the quality of the data. If it is determined that the situation warrants a reportable nonconformance requiring corrective action, then a nonconformance report will be initiated by the manager.

The Field Leader will be responsible for ensuring that corrective action for nonconformances are initiated by:

- evaluating all reported nonconformances;

- controlling additional work on nonconforming items;
- determining disposition or action to be taken;
- maintaining a log of nonconformances;
- reviewing nonconformance reports and corrective actions taken;
- ensuring nonconformance reports are included in the final site documentation in project files.

If appropriate, the Field Leader will ensure that no additional work that is dependent on the nonconforming activity is performed until the corrective actions are completed.

Corrective action for field measurements may include:

- Repeat the measurement to check the error;
- Check for all proper adjustments for ambient conditions such as temperature;
- Check the batteries;
- Re-Calibration;
- Check the calibration;
- Replace the instrument or measurement devices;
- Stop work (if necessary).

The Field Leader or his designee is responsible for all site activities. In this role, the Project/Site Manager at times is required to adjust the site programs to accommodate site specific needs. When it becomes necessary to modify a program, the responsible person notifies the Project Coordinator of the anticipated change and implements the necessary changes after obtaining the approval of the Project Coordinator.

The change in the program will be documented on the field change request (FCR) that will be signed by the initiators and the Field Leader. The FCR for each document will be numbered serially as required. The FCR shall be attached to the file copy of the affected document. The Project Coordinator must approve the change in writing or verbally prior to field implementation, if feasible. If unacceptable, the action taken during the period of deviation will be evaluated in order to determine the significance of any departure from established program practices and action taken.

The Project Manager for the Textron Automotive Company site is responsible for the controlling, tracking, and implementation of the identified changes. Reports on all changes will be distributed to all affected parties which include the MDEQ.

11.2 LABORATORY ANALYSIS

Laboratory Corrective Actions

Corrective action will be implemented at several different levels. The certified laboratory will have a written SOP specifying corrective action to be taken when an analytical error is discovered or the analytical system is determined to be out of control as shown in the supplied QA/QC Plan. The QA/QC Plan requires documentation of the corrective action and notification by the analyst about the errors and corrective procedures.

The Project Manager may request corrective action for any contractual non-conformance identified by audits or data validation. The project Manager may request corrective action to be taken when an analytical error is discovered or non-conformance is identified. Corrective action may include:

- Re-analyzing the samples, if holding time criteria permits;
- Re-sampling and analyzing, and/or;
- Evaluating and amending sampling procedures and/or evaluating and amending analytical procedures; and/or,
- Accepting data and acknowledging the level of uncertainty.

12.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

All quality assurance issues shall be incorporated in to the quarterly progress report submitted to the MDEQ project manager for the first year and in the bi-annual report submitted for the second through thirtieth years. The final monitoring activities report will contain QA sections that summarize data quality information collected during the project. QA/QC issues included in the project reports will include:

- changes in the QA Project plan;
- summaries of QA/QC programs and accomplishments;
- results of QA/QC audits;
- QA/QC problems and corrective actions;
- data quality assessments;
- indicators of QA objective satisfaction; and

The final Textron Automotive Company monitoring report will contain a QA/QC project summary.

13.0 SAMPLING AND ANALYSIS PROGRAM

13.1 SAMPLE CONTAINERS

Samples collected for the Textron Automotive Company Equalization Lagoon Groundwater Monitoring project will use containers selected in accordance with the most recent directives provided by the U.S. EPA. This document specifies container types, cleaning procedures, and quality assurance/quality control requirements related to container use. The certified laboratory will supply pre-cleaned containers and perform QA/QC operations as specified in the EPA container directive.

Sample types and containers are listed below:

<u>ANALYTE</u>	<u>MEDIA</u>	<u>EPA METHOD</u>	<u>No. & CONTAINER TYPE</u>
Volatile Organic Compounds	Groundwater	SW846 Method 8240	3 x B
B Container	40-mL glass vial, 24-mm neck finish		
Closure	white polypropylene or black phenolic, open-top, screw cap, 15-cm opening, 24-400 size		
Septum	24-mm disc of 0.005-in teflon bonded to 0.120-in silicon for total thickness of 0.125-in.		
RCRA (8) Metals	Groundwater	6010	1 x C
C Container	1-L high-density polyethylene, cylinder-round bottle, 28-mm neck finish		
Closure	white polyethylene cap, white ribbed, 28-410 size; F217 polyethylene liner		

13.2 HOLDING TIMES AND PRESERVATION METHODS

Water samples collected for VOC analysis using Method 8260 will be preserved by adding 1:1 HCl to obtain a pH less than 2. Water samples will be cooled to 4° C and transported to the testing laboratory at this temperature. Samples must be analyzed within 14 days from the time of sampling.

Water samples collected for RCRA (8) Metals analysis will be preserved using Nitric Acid to obtain a pH less than 2. Samples must be analyzed for Mercury within 28 days from the time of sampling. All other metals must be analyzed within 6 months.

13.3 SAMPLE COLLECTION

Samples of groundwater will be obtained from monitoring wells RT-1, RT02, RT-4 and RT-5 existing at the Textron Automotive Company site. Groundwater samples from monitoring wells will be collected using clean fluorocarbon resin bailers. The bailers will be raised and lowered into the wells using braided cotton rope of an appropriate diameter. Bailers have a single check-valve for sample collection.

Field personnel will verify the appropriate level of personal protection to use for groundwater sampling, in accordance with the approved Site Health and Safety Plan (HASP).

Monitoring wells will be purged using bailers or pumps, depending on recharge rates. At least three well volumes will be removed during the purging process. The amount of water to be removed during purging will be calculated by the following formula:

$$(3.1415 \times (r/12)^2) \times (TD - DTW) \times 7.481 = 1 \text{ well volume (gallons)}$$

Where: r = well radius (inches)
 TD = well depth (feet)
 DTW = depth to water (feet)
 3.1415 = π
 7.481 = constant (gal/ft³)

Depth to water will be determined using an incremented interface probe. The depth to water will be measured from a survey point marked on the well casing. Measurements will be recorded to the nearest 0.01 foot increment.

Field readings of pH, temperature, and specific conductance will be taken from a water sample before, during, and after purging is completed. Concordance of readings will determine if the well has been adequately purged. Purging equipment will be decontaminated using the appropriate procedure before the next well is purged.

VOC samples will be collected in approved sample containers provided by the testing laboratory. The monitoring wells will be purged, and the purge volumes properly handled for containment and disposal.

Successive purged water samples should meet the following specifications before sampling:

pH: ± 0.10 s.u.
conductivity: $\pm 5\%$
temperature: $\pm 0.2^\circ\text{F}$

Disposable nitrile gloves will be worn during the sampling event. During VOC sampling, the bailer will be slowly lowered into the well water, filled, and retrieved. VOC samples will be collected by decanting water from the bailer into 40 mL septum vials. Vials will be filled until a convex meniscus is present, and then

capped. The cap will then be secured and vial checked for trapped air. Any samples with entrained air will be discarded, and new samples collected. Duplicate and field blank samples will be prepared concurrently with the sample batch being processed, using identical methods. Samples, blanks and duplicate vials will be assigned unique identification codes that cannot be interpreted by the testing laboratory, but that clearly identify the samples.

Wells will be sampled in the following order:

RT-1 first, RT-5 second, RT-4 third and RT-2 last.

The number and type of blanks and duplicates are described in the project Quality Assurance Program Plan (Section 1- Table 1.3). This prevents analytical biases that could arise if blanks and duplicates could be readily identified by the testing laboratory. Trip blanks are prepared by the testing laboratory using distilled or deionized water. The trip blanks accompany the sample vials through the distribution and transportation chain of custody. Field blanks are prepared at the sampling location, prepared using distilled or deionized water instead of sampled groundwater. Field blanks are intended to contact the clean sampling device (bailer) used for collecting groundwater from the monitoring wells.

All samples will be placed on ice (or an ice substitute) in a cooler following collection. Field checklists will be used to verify the proper execution of sampling tasks. These forms will be completed as part of the field notebook documentation. Custody seals will be used for compliance samples.

13.4 SAMPLE CUSTODY PROCEDURE

13.4.1 Sample Identification

A sample numbering system will assign a unique identification number to each sample collected during a sampling event. Quality control and field samples will be included in the identification system. Each sample label and record will include a project identification code, a sample type and location code, and a sampling event code. The field team leader will maintain a log book recording the sample identification listings.

The identification code is designed to prevent the analytical laboratory from identifying QA/QC samples during analysis. This will serve to verify the integrity of the laboratory analysis.

13.4.2 Preliminary Procedures

Checklist verification will be collected before each sampling round to confirm that the analytical laboratory is prepared to receive the samples. The analytical laboratory will be notified two weeks in advance of any scheduled sampling events. Non-routine sampling may be scheduled for other purposes (e.g. monitoring upset conditions). The analytical laboratory will be informed regarding the number of samples, the desired analytical methods to be employed, and the expected sample arrival date.

Sample containers, sample preservative, labels, and custody tape stocks will be reviewed before each sampling event to assure an adequate supply. Trip blanks will be prepared the day before the sampling event.

13.4.3 Sample Custody

Sample collection activities and conditions will be recorded by sampling personnel in field notebooks. Entries will be written in black ink. Mistakes will be lined out with a single stroke, and the corrections initialed and dated by the recorder. Records will be complete enough to reconstruct the sampling activity being recorded. Field notes will be kept in bound books, with sequentially numbered pages. Each log book will carry an individual identification code, and assigned to a specific project team member. Each log book will contain a title page describing:

- Who it is assigned to;
- The log book number;
- The project name;
- The project start date;
- The final log book entry date.

At the beginning of each entry, the date, time, site conditions, team roster, level of protection used, and signature of the person making the entries will be recorded. Sample collection locations will be noted by compass and distance measurements, photographs, or other definitive methods.

Field equipment used will also be recorded, along with calibration data. Sampling equipment, time, location, depths, and volume and number of containers will be recorded for each sampling event, along with the sample identification codes. QA/QC samples will be recorded in the same manner.

Samples will be accompanied by chain of custody forms. Appropriate signatures and container conditions will be recorded on the form when the samples possession is transferred. Records will include sample transfer date, time, and signatures of relinquishing and receiving parties.

Field personnel will verify in the sample log book that samples were properly packed and dispatched to the analytical laboratory with the proper custody documentation. Shipping containers will be secured with

package tape and custody seals (when appropriate). The original custody record will be sent with the samples, and copies retained by the field personnel.

If samples are sent by commercial carrier, the carrier is not required to sign the custody forms as long as the sample container custody seals remain intact. If a common carrier is used, a bill of lading should be included in the custody documents. If the sample container is mailed, the container should be sent with return receipt requested.

Evidence files will be maintained by Textron Automotive Company. These files will include log books, records, data packages, pictures, reports, correspondence, subcontractor's reports, and other related project records. This file will be kept by the Project Manager in a secure area, in locked storage cabinets.

13.5 SAMPLE HANDLING AND SHIPPING

Sample containers and preservatives will be selected according to CLP guidance, and the EPA TO-14 method protocol.

13.5.1 Sample Packing and Shipment

The exterior of sampling containers will be decontaminated before packing for shipment to the analytical laboratory. Sample documentation and labeling will conform to methods described in *A Compendium of Superfund Field Operations Methods, U.S. EPA, December, 1987*. Sample packing will follow the general procedure outlined below:

- Sample container is labeled;
- Sample container caps are taped shut;
- Each container is placed in a ziplock bag (or equivalent) that will be sealed prior to shipping;
- Samples shipped in coolers will have the drain plug taped shut and packing material added to cushion the bottom of the cooler;
- Sample containers are placed in the cooler;
- VOC samples are packed in ice or with an ice substitute;

- The remainder of the cooler is filled with packing material to prevent containers from making contact with each other or the cooler walls;
- Custody forms and sampling request forms are placed in a zip lock bag (or equivalent) that will be sealed prior to shipping within the cooler; and
- Appropriate shipping forms are filled out and attached to the cooler; the cooler is sealed with tape; custody seals are placed on the cooler, when appropriate.

13.6 DECONTAMINATION

Samplers will wear nitrile gloves during sampling operations to reduce the prospect for sample cross-contamination. Gloves will be changed between new sampling locations. Other protective clothing will be changed only if there is obvious contamination of surfaces that may affect sample collection.

Decontamination of soil coring devices will be conducted following the use of each device or piece of equipment contacting sampled media. Decontamination will be conducted using a steam clean cycle or brush scrubbing with Alconox in distilled or deionized water, followed by rinsing with high grade water.

Sample bottles will not be reused, so no additional cleaning after receipt from the analytical laboratory is necessary.

Sampling devices will be clean wrapped in plastic after decontamination. Rinsate blanks will initially be analyzed to confirm the efficiency of the decontamination cycles.

13.7 SAMPLING AND WASTE DISPOSAL

Sampling will produce wastes from:

- Groundwater well purges;
- Disposable sampling equipment;
- Decontamination water;
- Soil core remains post-sampling.

Water wastes will be placed in containers and evaluated for discharge into either the local POTW system or the facility wastewater treatment system. Containers will be marked according to DOT and EPA guidelines. Disposable equipment will be collected in separate containers. Disposal will be accomplished by shipping the disposable material to an appropriate solid waste facility. Laboratory waste will be handled by the analytical laboratory, as described in their waste handling protocols. Soils collected during sampling activities will be placed in 55-gallon drums and characterized for proper disposal. Drums will be stored with locked caps and in an isolated area.

QUALITY ASSURANCE PROJECT PLAN

APPENDICES

APPENDIX A

BORING LOGS

BORING LOG

BORING NO. **RT-1**

PROJECT **Equalization Basin
RCRA Detection Monitoring**

LOCATION Grenada, Mississippi	FACILITY Randall Textron Plant	SURFACE ELEVATION Not Surveyed	TOTAL DEPTH 20.0 ft
GEOLOGIST S. Moyers	SAMPLE FREQUENCY Continuous	SAMPLE TYPE Split Spoon	DATE BORING COMPLETED December 17, 1991
DRILLER C. Odom	DRILLING CONTRACTOR Envirotech	DRILLING METHOD Hollow-Stem Auger	RIG TYPE CME-75
SAMPLE TYPE <input checked="" type="checkbox"/> CONTINUOUS <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> NO SAMPLE RECOVERED			

DEPTH IN FEET	INTERVAL	SAMPLE GRAPHIC	LOG	DESCRIPTION	COMMENTS	TIP
0						
1				CLAY, silty, dark brown, soft.		
2				GRAVEL, coarse.		3.0
3				CLAY, silty, sandy, gray; pebbles.		3.7
4						3.6
5						5.5
6						3.0
7						3.2
8						5.3
9				5.0' - 18.0' Sand and silt, fine-grained.		3.3
10				SAND, medium-grained, fairly well-rounded and sorted.		3.5
11				8.0' - 20.0' Increasing clay content, dark maroonish-brown.		3.5
12						
13						
14						
15						
16						
17						
18						
19						
20					End of boring at 20.0 ft	
21						
22						
23						
24						
25						

BORING LOG

BORING NO.

RT-2

PROJECT

Equalization Basin
RCRA Detection Monitoring

LOCATION Grenada, Mississippi	FACILITY Randall Textron Plant	SURFACE ELEVATION Not Surveyed	TOTAL DEPTH 20.0 ft
GEOLOGIST S. Moyers	SAMPLE FREQUENCY Continuous	SAMPLE TYPE Split Spoon	DATE BORING COMPLETED December 17, 1991
DRILLER C. Odom	DRILLING CONTRACTOR Envirotech	DRILLING METHOD Hollow-Stem Auger	RIG TYPE CME-75

SAMPLE TYPE



CONTINUOUS



SPLIT SPOON



NO SAMPLE RECOVERED

DEPTH IN FEET	INTERVAL	SAMPLE GRAPHIC LOG	DESCRIPTION	COMMENTS	TIP
0					
1			SILT, clayey, brown with gray mottling.		11.4
2					20.8
3					79.0
4			SAND, fine-grained, silty, tan.		19.6
5			8.0' - 12.0' Decreasing in silt content.		100
6				Wet	169
7			12.0' - 20.0' Medium- to coarse-grained, fairly well-rounded and sorted.		391
8					693
9					383
10					182
20			End of boring at 20.0 ft		
25					

BORING LOG

BORING NO. **RT-3**

PROJECT **Equalization Basin
RCRA Detection Monitoring**

LOCATION Grenada, Mississippi	FACILITY Randall Textron Plant	SURFACE ELEVATION Not Surveyed	TOTAL DEPTH 20.0 ft
GEOLOGIST S. Moyers	SAMPLE FREQUENCY Continuous	SAMPLE TYPE Split Spoon	DATE BORING COMPLETED December 18, 1991
DRILLER C. Odom	DRILLING CONTRACTOR Envirotech	DRILLING METHOD Hollow-Stem Auger	RIG TYPE CME-75
SAMPLE TYPE <input checked="" type="checkbox"/> CONTINUOUS <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> NO SAMPLE RECOVERED			

DEPTH IN FEET	INTERVAL	SAMPLE GRAPHIC LOG	DESCRIPTION	COMMENTS	TIP
0	1		SILT, clayey, brown; with fine-grained sand.	Moist	1.7
	2				1.8
5	3		5.0' - 11.5' Clayey, brown with tan mottling, stiff.		2.0
	4				2.0
10	5				2.1
	6				2.1
	7		SAND fine-grained, gray.	Wet	2.3
15	8		14.0' - 20.0' Fine- to medium-grained, brownish-tan; some silt and clay.		2.5
	9				2.5
20	10			End of boring at 20.0 ft	No Recovery
25					

BORING LOG

BORING NO. **RT-4**
PROJECT **Equalization Basin
RCRA Detection Monitoring**

LOCATION Grenada, Mississippi	FACILITY Randall Textron Plant	SURFACE ELEVATION Not Surveyed	TOTAL DEPTH 20.0 ft
GEOLOGIST S. Moyers	SAMPLE FREQUENCY Continuous	SAMPLE TYPE Continuous Sampler	DATE BORING COMPLETED March 17, 1992
DRILLER C. Lee	DRILLING CONTRACTOR TTL, Inc.	DRILLING METHOD Hollow-Stem Auger	RIG TYPE CME-550

SAMPLE TYPE ☒ CONTINUOUS ☐ SPLIT SPOON ☐ NO SAMPLE RECOVERED

DEPTH IN FEET	INTERVAL	SAMPLE	GRAPHIC LOG	DESCRIPTION	COMMENTS	TIP
0						
1				CLAY, silty, brown with gray mottling.		1.2
2						0
3						0.8
5				5.0' - 6.5' Gray, sticky.	Wet	0.3
4						0.3
5				6.5' - 13.0' Medium brown.		0.3
10						1.0
6						2.4
7						
8				SAND, medium-grained, gray.	Wet	11.0
15						14.3
9				16.0' - 20.0' Coarse-grained, fairly well-rounded and sorted.		47.5
10						
20				End of boring at 20.0 ft		
25						

BORING LOG

BORING NO. **RT-5**
PROJECT **Equalization Basin
RCRA Detection Monitoring**

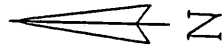
LOCATION Grenada, Mississippi	FACILITY Randall Textron Plant	SURFACE ELEVATION Not Surveyed	TOTAL DEPTH 20.0 ft
GEOLOGIST S. Moyers	SAMPLE FREQUENCY Continuous	SAMPLE TYPE Continuous Sampler	DATE BORING COMPLETED March 17, 1992
DRILLER C. Lee	DRILLING CONTRACTOR TTL, Inc.	DRILLING METHOD Hollow-Stem Auger	RIG TYPE CME-550

SAMPLE TYPE ☒ CONTINUOUS ☐ SPLIT SPOON ☐ NO SAMPLE RECOVERED

DEPTH IN FEET	INTERVAL	SAMPLE	GRAPHIC LOG	DESCRIPTION	COMMENTS	TIP
0						
1				CLAY, silty, brown with gray and yellowish-brown mottling.		0.1
2						0
3						0
5						0
4						0
5						0.1
10				SAND, fine-grained, brown; with stringers of grayish-brown silty clay (≤0.05 ft thick).	Wet	11.2
7						24.2
8				14.5' - 18.0' Medium-grained, brown.		38.6
15				16.0' - 20.0' Medium- to coarse-grained, brown, fairly well-rounded and sorted.		53.9
9						
10						54.7
20					End of boring at 20.0 ft	
25						

APPENDIX B

GROUNDWATER DEPTH AND FLOW DATA



LEGEND

- EXISTING MONITORING WELL
- - - FENCE LINE
- + - RAILROAD
- 172 - POTENTIOMETRIC SURFACE ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION

ILLINOIS CENTRAL AND GULF RAILROAD

EQUALIZATION BASIN

RANDALL TEXTRON PLANT

HIGHWAY #332

RAW WASTE
PUMP STATION

• RT-1
172.93

• RT-3
172.40

• RT-2
172.01

172.75

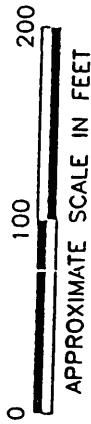
172.50

172.0

171.75

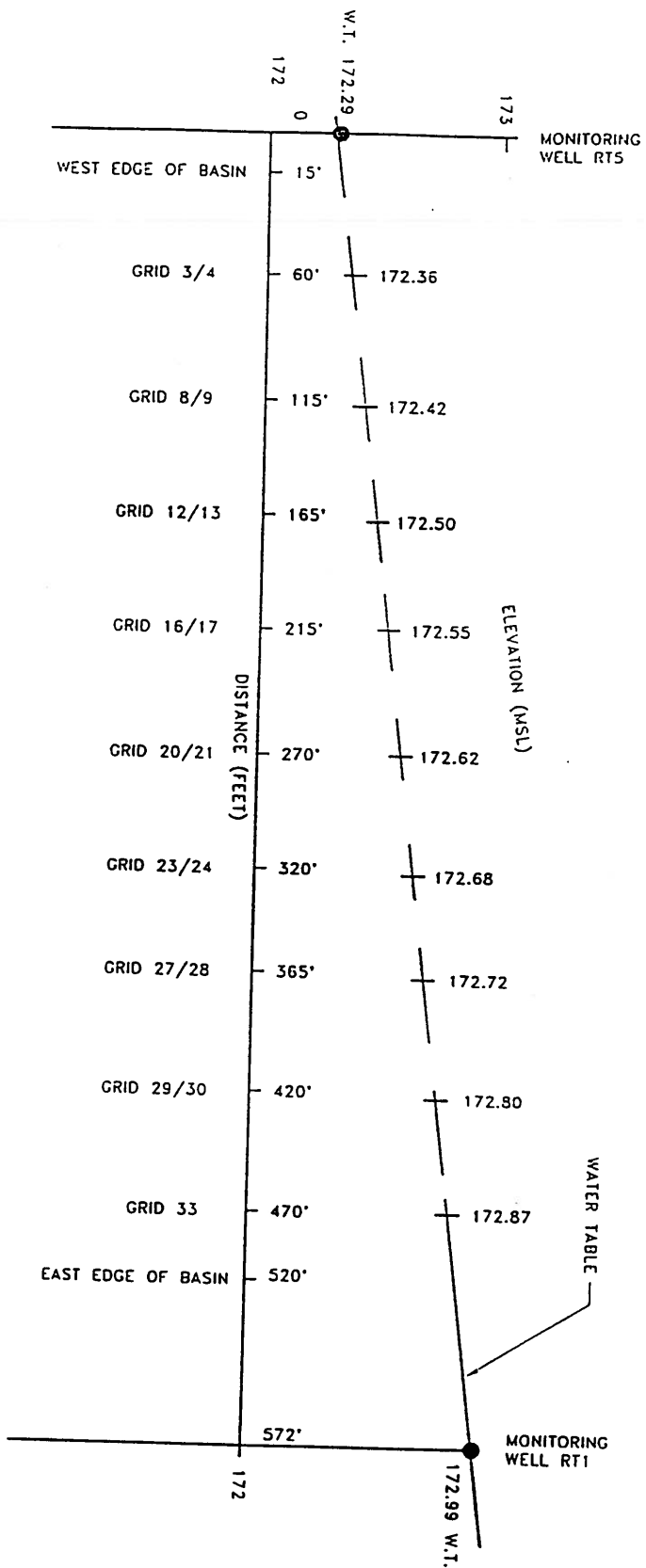
• RT-4
171.71

• RT-5
171.73



DESIGNED BY	C.O.D. FILE NO.			D.O.S. DATE	
DRAWN BY	R010012G			12-5-94	
CHECKED BY	SCALE 1" ~ 100'				
APPROVED BY	PROJECT NO.			R0010-001-02	
DATE	DRAWING NO.			REV. 12-5-94	
12-5-94	4-6			0	

POTENTIOMETRIC SURFACE MAP - AUGUST 17, 1994 GRENADA, MISSISSIPPI	PREPARED FOR RANDALL TEXTRON	SECOR INTERNATIONAL INCORPORATED
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SEACOR
ENVIRONMENTAL
ENGINEERING

PREPARED FOR
RANDALL-TEXTRON
GRENADA, MS

WATER TABLE GRADIENT
EQUALIZATION
LAGOON CLOSURE PROJECT

DESIGNED BY
CL
CHECKED BY
JB
APPROVED BY
-
DATE
8-24-94

CADD FILE NO.
R010012A
SCALE
AS SHOWN
PROJECT NO.
R0010-001-02
FIGURE NO.
1
CADD DATE
8-24-94
REV.
0
FIGURE NO.
-

Randall-Textron; Grenada, MS
EQUALIZATION LAGOON
Summary of Water-Level Elevations

Well Number	Date Measured	Depth to Water (ft)	Measuring Point Elevation (TOC) (ft, msl)	Water-Level Elevation (ft, msl)
RT-1	3/92	12.02	185.18	173.16
	4/92	12.12		173.06
	5/92	12.46		172.72
	6/92	12.76		172.42
	8/9/94	12.20		172.98
	8/10/94	12.20		172.98
	8/11/94	12.20		172.98
	8/12/94	12.20		172.98
	8/15/94	12.19		172.99
	8/16/94	12.25		172.93
	8/17/94	12.25		172.93
RT-2	3/92	12.00	184.56	172.56
	4/92	12.17		172.39
	5/92	12.46		172.10
	6/92	12.76		171.80
	8/17/94	12.55		172.01
RT-3	3/92	N/A	184.00	--
	4/92	11.36		172.46
	5/92	11.65		172.35
	6/92	11.98		172.02
	8/17/94	11.60		172.40
RT-4	3/92	12.63†	184.33	171.70†
	4/92	12.24		172.09
	5/92	12.52		171.81
	6/92	12.77		171.56
	8/9/94	12.58		171.75
	8/10/94	12.57		171.76

Summary of Water-Level Elevations, continued

Well Number	Date Measured	Depth to Water (ft)	Measuring Point Elevation (TOC) (ft, msl)	Water-Level Elevation (ft, msl)
RT-4	8/11/94	12.58		171.75
	8/12/94	12.58		171.75
	8/15/94	12.58		171.75
	8/26/94	12.62		171.71
	8/17/94	12.62		171.71
RT-5	3/92	12.07†	184.17	172.10†
	4/92	12.05		172.12
	5/92	12.33		171.84
	6/92	12.58		171.59
	7/21/94	12.20		171.97
	8/2/94	11.88		172.29
	8/3/94	11.90		172.27
	8/4/94	11.95		172.22
	8/5/94	12.10		172.07
	8/8/94	12.55		171.62
	8/9/94	12.38		171.79
	8/10/94	12.37		171.80
	8/11/94	12.38		171.79
	8/12/94	12.38		171.79
	8/15/94	12.37		171.80
	8/16/94	12.41		171.75
	8/17/94	12.42		171.75

ft - feet

msl - mean sea level

TOC - top of casing

N/A - not available

†Approximate values. Wells had not reached equilibrium at time of measurement.

QUALITY ASSURANCE PROJECT PLAN

FIGURES

FIGURE 1

SITE LAYOUT MAP

FIGURE 2

MONITORING WELL DIAGRAM

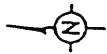
DRAWING DATE: 23SEP92 BJ | PROJECT NO.: T420001

FILE NAME: RCRA DETECTION | DRAWING NO.: 91-6079 •

CHECKED: S. MOYERS

APPROVED: A. MOLEY

DRAFTER: B. ALTON



EXPLANATION

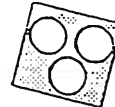
- Concrete
- RT-1 Existing Monitor Well Location and Number

ILLINOIS CENTRAL AND GULF RAILROAD

Equalization Basin

Upgradient Well

RT-1



ABOVE GROUND STORAGE TANKS

SANITARY PUMP

GRAVEL

Production Well

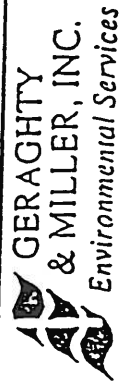
RAW WASTE PUMP STATION

REMOVED USE

RAMP

Randall Textron Plant

SCALE 0 (approximate) 25 ft



MONITORING WELL LOCATIONS
Randall Textron Plant Grenada, Mississippi

FIGURE

ATTACHMENT D
CONTINGENCY PLAN

CONTINGENCY PLAN

PURPOSE

Our contingency plan is a part of the emergency response procedures. The contingency plan addresses the specific reasons when we would need to use the plan and lists the duties of individuals involved in the event of an emergency.

Our company's address is **Textron Automotive Company**
 635 Highway 332 East
 Grenada, Mississippi 38901

Site plans for our company are provided in this section under "**Facility Layout**".

We are a generator of hazardous waste. Our EPA ID Number is **MSD 007037278**.

In the event of any of the following, the contingency plan will be implemented by the Emergency Coordinator:

- Fire
- Explosion
- Release of hazardous waste or hazardous waste constituents that may harm human health or reach surface waters.

EMERGENCY PREPAREDNESS TEAM INTRODUCTION

The facility's Emergency Coordinators are listed in the order in which they would assume authority during working hours. One of these persons will be on duty or on call at all times. The Emergency Coordinator has the authority to IMPLEMENT AND CARRY OUT the requirements of this plant.

PRIMARY EMERGENCY COORDINATOR: **Don Williams**
 879 Mitchell Road
 Scobey, MS 38953
 Office Number: 209 or 225
 Home Number: 226-6913
 Beeper Number: 229-9304

ALTERNATE EMERGENCY COORDINATOR: **Chet Melton**
 330 Bruce Road
 Grenada, MS 38901
 Office Number: 230
 Home Number: 226-7344

ALTERNATE EMERGENCY COORDINATOR: **Sayles Martin**
 Route 2
 Hardy, MS 38901
 Office Number: 216
 Home Number: 229-0099

The Contingency Plan implementation is the responsibility of the Emergency Coordinator and the

Facilities Emergency Preparedness Team. When an emergency situation arises, the nature and scope of the emergency is analyzed and the decision made as to what reaction our personnel should have and if the team members can address the emergency without endangering themselves. There may be emergency situations to occur that are beyond the resources of the facility personnel to handle themselves due to improper equipment or lack of expertise. In those situations, the team members would assist the appropriate authority if requested to do so.

EMERGENCY PREPAREDNESS TEAM MEMBERS

The employees listed below are all members of the Plant Maintenance Department and all have the necessary knowledge of the entire plant and surrounding area. Although the team members may be transferred from one shift to another over a period of time, the function of each team member will remain the same. The designation of the particular areas of responsibility will insure both 24 hours a day protection and adequate knowledge and experience to function efficiently during the incipient stages of conceivable emergency situations.

Emergency Coordinator: Don Williams
Fire Chief: Sam Suggs
Asst. Emergency Coordinator: Chet Melton

TEAMS

FIRST SHIFT

Leader - Owens Burt
Sprinkler Valve Control - Aaron Foster
Fire Pump Operator - Jim Haynes
Piper - David Noel
Electrician - Owens Burt
Fire Squad Members - All other day shift maintenance employees

SECOND SHIFT

Leader - John Brown
Sprinkler Valve Control - John Brown
Fire Pump Operator - John Reed
Piper -
Electrician -
Fire Squad Members - All other second shift maintenance employees

THIRD SHIFT

Leader - James Clark
Sprinkler -
Fire Pump Operator - Roy Crowder
Piper - James Clark
Electrician -
Fire Squad Members -

EMERGENCY PREPAREDNESS TEAM

INTENT: The intent of the formation of an Emergency Preparedness Team is to be able to recognize and handle in early stages any conceivable emergency which may arise at Textron Automotive of Grenada. These potential emergencies include fire-fighting in the incipient stages, floods, earthquakes, tornadoes, and other adverse acts of nature such as high winds, ice storms, lightning damage, etc. The primary concern is to minimize "down-time" of production and loss of property and life. It is recognized by management that an effective and trained Emergency Preparedness Team can serve as a valuable resource in the preservation of property and life.

SCOPE: The Emergency Preparedness Team will consist of members from all shifts, e.g. Each shift will have designated assignments. The team members will be volunteers, in good general health and good over all safety record. The team members will understand the limitations and job duties for each team member and will not act beyond the incipient stage unless they are properly trained, instructed and/or directed by a professional advisor on the scene.

TEAM POSITIONS AND RESPONSIBILITIES

Each shift team will be composed of the following with alternates designated for each:

I. Team Leader

Will be the person in charge of the team and will make sure of the following:

- a. Make arrangements for a training program for all members and see that positions are filled.
- b. Will direct all protection action until arrival of the public fire department and/or Civil Defense.
- c. In the event of fire, he will:
 1. See that all members are in place and performing as they have been trained.
 2. Will alert the guard or notifier to station a person at the gate to guide the public fire department to the trouble area.
 3. Get fire protection back in service as soon as fire is out.
 4. Make inspections following the fire to make certain it could not start up again in same place or elsewhere in the plant.
- d. **Non-Fire Emergency Situations-**
Will direct the action of the Emergency Preparedness Team during non- fire emergency situations such as during storms when storm alert is issued, windstorms, tornadoes, floods, and earthquakes.

Team positions and Responsibilities (continued)

II. Notifier

Contacts the local fire department or civil defense director when instructed by the team leader.

III. Sprinkler Valve Operator

- a. Must know location of the valves and be responsible for their operation.
- b. In the event of fire, go to the valve controlling the fire area and make sure that it is open, and stand by the valve until it is ordered closed by the team leader.
- c. Must know how to test valves to be sure they are open.

IV. Fire Pump Operator

- a. Checks the automatic starting pump and starts it if it fails to start automatically and keeps it in operation until instructed to shut it down.
- b. Should be familiar with the operation and care of the pumps.

V. Fire Squad Members

- a. Basic purpose is to fight an incipient fire until the local fire department arrives.
- b. Know the location of all fire extinguishers, automatic fire doors and fire hoses and the proper use thereof.
- c. Serve in salvage operations in order to protect equipment from adverse elements, clean-up.

VI. Piper

- a. Be familiar with in-plant piping system to include water, air, steam, chemicals, and flammable gas.
- b. Know how to shut off flammable gases or chemical piping in an emergency area.

VII. Electrician

- a. Know the location of all switches in the area and know where portable generators, extension cords and emergency electric power equipment are located.

Team positions and Responsibilities (continued)

- b. Be accountable for shutting down electrical fans or handling operation of ventilating equipment.
- c. Be able to establish temporary lighting or that existing emergency lights are in operation.

VIII. Security Guard

Included in normal guard duties are the following:

- 1. Be familiar with the plant and be able to recognize a problem.
- 2. Know how to shut off gas, oil, steam, or electricity in the event of an emergency.
- 3. Know where the protective equipment is located and how to use them (e.g. fire extinguishers, hose, sprinkler control valves).
- 4. Know the FM Red Tag System for controlling sprinkler valve operations.
- 5. Report immediately any conditions that are dangerous or undesirable.
- 6. During off hours he should sound the alarm, check the sprinkler valve (and fire pump), guide the fire fighters, notify plant officials, stay on hand, make sure the fire is out and put sprinkler protection back in service.

TRAINING

All team members and alternates will be trained prior to assignment to the Emergency Preparedness Team and additional training thereafter. As a minimum, all team members will be afforded "hands-on" training annually. This training will include the use of fire extinguishers, standpipes, and other fire equipment they are assigned to use.

Other Training

- 1. Basic first aid procedures.
- 2. Special hazard considerations such as chemical fires, explosions.

3. Film strips, video cassettes, etc. on different subjects dealing with fire fighting and other emergency situations.

Frequency of training will be at least monthly until the proficiency of the team members is developed. Then no less often than annually.

**JOB DUTIES
AND
RESPONSIBILITIES**

PIPER

WHAT TO DO IN CASE OF FIRE.....

BEFORE IT HAPPENS:

1. Familiarize yourself with the steam, water, and other piping in that part of the plant for which you are responsible.
2. Make sure you know how the valves open and close.
3. Be sure you understand how you fit in the basic plan of the Emergency Preparedness Team.

DURING FIRE:

1. Be ready to shut off flammable gas and liquid systems in the fire area.
2. Be ready to close off steam and other lines that might interfere with fighting the fire.
3. Be ready to operate emergency drainage systems and take whatever piping measures are necessary to protect the plant and help fight the fire.
4. Be ready to replace the sprinkler heads that open.

AFTER THE FIRE:

1. Make sure the valves on flammable gas and liquid systems stay shut until cleared by the team leader.
2. When the team leader or fire chief gives okay, turn on the other lines.
3. Keep emergency drainage systems operating and stand by for further instructions.
4. Replace automatic sprinklers as directed by the team leader or fire chief.

ELECTRICIAN

WHAT TO DO IN CASE OF FIRE.....

BEFORE IT HAPPENS:

1. Learn location of all switches controlling electricity in the areas.
2. Know where or how to obtain portable generators, power cords, etc. If necessary.
3. Be sure you understand the basic plan of The Emergency Preparedness Team regarding the use of electricity during fire or other emergencies.

DURING THE FIRE:

1. Immediately shut down fans, ventilating equipment, etc. According to pre-arranged plan.
2. Stand by and be ready to rig temporary electrical connections for lighting or power.

AFTER THE FIRE:

1. Before turning electricity back on, determine whether or not it is safe to do so.
2. Stand ready to supervise the electrical safety of the personnel who must work in the damaged area.
3. If it is unsafe to use certain electrical lines, lock the switches governing them and post signs near by.

FIRE PUMP OPERATORS

WHAT TO DO IN CASE OF FIRE.....

BEFORE IT HAPPENS:

1. Make sure you understand when to use the fire pump.
2. Learn what the pump does.
3. Be sure you know how to run it and how to start the auxiliary engine.

DURING A FIRE:

1. If the pump is not running on automatic -- start it.
2. Keep pump running until the fire chief or team leader instructs you to turn it off.

AFTER A FIRE:

1. Be sure the pump is again ready for action.
2. Make sure that any screens in the suction line are completely clear.
3. Make sure the suction tank is refilling properly.

SPRINKLER CONTROL VALVE OPERATOR

WHAT TO DO IN CASE OF FIRE.....

BEFORE A FIRE:

1. Find out how many sprinkler valves you are responsible for and learn where they are.
2. Learn how each one operates.....if it opens by turning to the right or to the left.

DURING A FIRE:

1. Go to the sprinkler valve controlling the fire area and make sure it is open.
2. Keep it open until the fire chief or team leader tells you to close it.
3. Make sure valves are open for adjoining areas to which fire might spread.

AFTER A FIRE:

1. Remain at the closed valve until automatic sprinkler protection is restored or until you are relieved by the fire chief.
2. Be ready to re-open valve immediately if needed.
3. Before you leave be sure the valve is open and checked with a drain test. Then lock it.

FIRE SQUAD MEMBER

WHAT TO DO IN CASE OF A FIRE.....

BEFORE IT HAPPENS:

1. Find out the location of all fire extinguishers, small hoses and other portable equipment in your area.
2. Learn to distinguish the various types of extinguishers and the kind of fire to use them on.
3. Be sure you are familiar with the layout of your department, location of fire doors, exits, passageways, etc.

DURING THE FIRE:

1. Sound the alarm and report to Emergency Preparedness Team leader for instructions to night fire.
2. Stand ready to guide the moving of personnel from area, close fire doors, etc.
3. Before using fire extinguisher, make sure it is the correct type for the fire involved.

AFTER THE FIRE:

1. Carry out your specific assignment until team leader directs otherwise.
2. Stand ready to start salvage or clean up.
3. Make sure you report to team leader any extinguishers you use.

SALVAGE OPERATIONS:

1. Cover machinery, work in process, inventory, raw material, etc., with tarpaulins, plastic sheets, etc. to protect them from water damage.
2. Check with team leader to learn if there are any special assignments to carry out.
3. Start mopping up. Remove water from tarpaulin covers, benches, floor, etc.
4. Take necessary steps to prevent rusting of machinery parts, etc.

OTHER EMERGENCY PROCEDURES

FLOODS

During floods the greatest effort should be made to keep water out rather than planning to remove it once it fills the building since this is a much more difficult task. The lowest lying floor levels at Textron Automotive are the roll building and the boiler room. Flood plans must be implemented with these areas in mind first. The Emergency Preparedness Teams will have the responsibility of implementing the necessary measures to help prevent losses due to flooding.

When it appears that the protective measures should be implemented, the following steps are suggested:

1. Secure sandbags to block off openings around the lowest lying areas. Sand bags should also be placed around the outside walls since water can seep through the walls.
2. Pump rooms and boiler rooms must be kept as dry as possible. Water pumps should be secured should the necessity indicate.
3. Electric motors, other electrical equipment, and stored goods should be raised off the floor or moved to higher floors, especially in the Roll Department, boiler room, and buff basement.
4. Stationary equipment that cannot be moved can still be protected by applying a coating of nonpolar (water displacing) rust preventive compound.
5. Storage tanks, either within the building or nearby, are diked and should be filled if they are not anchored securely enough to keep them from floating away.
6. Protect sprinkler risers and gravity tank risers from possible damage by building barriers around them. Sandbags are usually sufficient.
7. Turn off all open flames, shut off the main gas valves, and close discharge valves on all tanks that contain flammable liquids such as gasoline, oil, or solvents.
8. Make sure any chemicals that react with water to produce heat and flammable or noxious gases are raised to upper levels.
9. Water that seeps past barriers can be controlled by brooms, squeegees, mops, etc.

EARTHQUAKES

While Textron Automotive of Grenada is not considered in an earthquake prone area, studies have indicated that the possibility exists for a major earthquake before the year 2000. The expected path of the earthquake is generally in a line from Missouri through the Mississippi Delta area on to Memphis, Tennessee. Obviously, we are in a area that could experience aftershocks associated with an earthquake of that magnitude.

The Emergency Preparedness Team must be aware of the possibility of such an event and remember the following points:

1. Due to the possible structural damage from an earthquake or aftershocks, employees should not assume they can remain in the building after the shock subsides.
2. The immediate emergency response may be limited to shutting off gas and flammable liquid lines and electrical service and to checking sprinkler control valves.
3. Re-entry of the facility should not be permitted until local building authorities inspect and approve re-entry and regular operation.

STORM AND TORNADO WARNINGS

Certain precautions should be taken whenever storm alerts are issued. These procedures are the responsibility of the Emergency Preparedness Teams. The team leader will appoint or assign duties to the appropriate team members.

Suggested procedures:

1. Check windows and replace missing panes, secure loose frames and brace them with wooden boards or cleats or, depending upon the situation, board up certain windows and other openings.
2. Firmly tie down loose objects outside or take them inside. High winds can turn garbage cans, tools, furniture, and other loose objects into deadly missiles.
3. Drums of dangerous or flammable chemicals should be moved into a sheltered area.
4. Inspect roof coverings, nail down loose coverings, awnings, etc. or weight them down at the edges with sandbags or other heavy objects. Be careful not to block drains.
5. Make sure an adequate supply of flashlights and fresh batteries are available and that emergency lights are functioning properly.
6. Stand ready to assist in moving personnel to less hazardous areas if necessary.
7. Keep in mind that telephone service might be disrupted and plan accordingly.

POINTS TO REMEMBER DURING A WINDSTORM

Lifting off of the roof, or part of it, is a major concern during a windstorm. The windward side of the roof receives direct pressure from the winds while the leeward side is subjected to a suction force. This condition in which air rushes across the top and produces suction provides the lift for airplane wings and also for roof tops. Tornado winds can do far more than blow a roof off. Air pressure inside a funnel cloud is exceedingly low, so if the funnel comes close to a building, the higher air pressure inside the building forces the walls out with an explosive force. Instead of blowing away the roof, the roof can fall straight down as the walls pop out. To reduce this dangerous pressure difference, open the windows on the side of the building away from the tornado's approach.

TEXTRON AUTOMOTIVE INTER-OFFICE MEMO

TO: All Employees

DATE: July 22, 1997

FROM: Chet Melton
PROCEDURES

SUBJECT: TORNADO

In the event of a tornado watch, the security guards and/or H. R. Personnel will monitor the local radio station for a possible up-grade to a tornado warning. The guards and/or H. R. Personnel will also listen for the sirens and will keep a watchful eye on the changing weather.

When a tornado warning is issued, the guard and/or H. R. Personnel will immediately notify the senior official in the facility if at all possible. He will sound the alarm throughout the facility to let the employees know a tornado warning has been issued for the area.

NOTE: Since we could possibly have power outages during this type of weather conditions, the alarm for tornado warnings will be a handheld air horn that emits a loud blast when activated. This alarm is for tornado warnings only.

The places listed below are considered the safest and most accessible areas to go during a tornado. While no place can be considered tornado proof, these areas should give the best protection possible.

<u>DEPARTMENT</u>	<u>WHERE TO GO</u>
Toolroom -----	Toolroom Office
Press, Setup, and Roll -----	Men's and Ladies Restrooms
Buff and Butler -----	Breakroom
Chrome and Lab -----	Q. C. Office
Paint, Pack, Vevay, Shipping/Receiving -----	Steel Storage Room
Office Personnel -----	Go to offices or restrooms where there is no exposure to an outside window.
Maintenance Personnel -----	If in the maintenance shop area, go to the men's room. If working in another area, go to the area designated for personnel in that area.
Outside Personnel -----	Get back into the facility as soon as possible and go to the nearest designated area.

RULES TO REMEMBER DURING A TORNADO WARNING

1. Keep away from outside windows. Wind conditions and pressures may cause glass to shatter with force.
2. Stay as low to the floor as possible.
3. Keep away from equipment, machinery, or other objects that could be toppled or become projectiles during high winds.
4. **Very Important.....** Do not leave the facility. The worst possible place to be during a tornado is on the roads. Vehicles offer little or no protection against tornado force winds.

AFTER THE TORNADO

Do not leave your area until notified to do so by management officials. The building could be weakened and there may be downed lines, etc. You will be notified when you may resume normal operations or what other instructions are needed.

Chet Melton
Safety/Security Director

/bd

DUTIES

ALL COMPANY PERSONNEL-

1. Report uncontrolled releases of hazardous chemicals to the outside environment to the emergency coordinator.
2. Alert other personnel working in the area to initiate protective measures.
3. Provide details of the release.
4. Contact the appropriate local authorities as directed by the emergency coordinator.
5. Assist in evacuation if necessary.
6. Barricade areas to prevent entrance.

EMERGENCY COORDINATOR--

1. Assess nature of the release (type of chemical).
2. Evaluate the immediate effects and use your Material Safety Data Sheets.
3. Determine if evacuation is necessary.
4. Help contain spill if there is no danger.
5. Remove incompatible materials to prevent reactions.
6. Notify your State Pollution Control Agency.
7. If reportable quantity has been released, notify the national Response Center at 800-428-8802 and give the following information:
 - *Your name and telephone number
 - *Facility name and location
 - *Time and date
 - *Type of incident (fire, spill, explosion)
 - *Name of material and amount involved
 - *Any injuries or hazards to human health or the environment
8. Coordinate spill cleanup.
9. Ensure spilled material is stored in proper containers.
10. Replace used emergency equipment, recharge or replace if needed.
11. Record the incident.
12. Reviews and updates. Periodic reviews are conducted to maintain a working response plan for our facility. If the contingency plan is implemented, the responses taken during the emergency will be reviewed at a later date for effectiveness and workability. Any changes will be noted in a revision to this plan.

EMERGENCY EQUIPMENT AND CAPACITIES (UPDATED APRIL 1996)

The following is a listing of emergency equipment available on-site for emergency response actions that will be handled by the in-plant response team members. For emergency situations that in-plant personnel are not trained or equipped to handle safely, outside agencies as identified in Section X of the Contingency Plan will be asked to assist.

EMERGENCY EQUIPMENT

FIRE

- 2-1/2" hoses, axes, lanterns, etc. are located in fire boxes placed in strategic spots surrounding the facility.
- 1-1/2" hoses in racks throughout the interior of each building on site.
- Fire extinguishers placed in designated areas throughout the buildings on site
- Two-way radios.

FLOODING

- Sandbags
- Pumps

STORMS AND TORNADOES

- Strapping, cables, ropes to secure loose objects
- Flashlights with fresh batteries available
- Boards to brace windows or other openings
- Sandbags to help weight down loose awnings, roofing, or other heavy objects

CHEMICAL SPILLS, RELEASES

- Personal protection equipment such as boots, chemical resistant suits, gloves, face shields, hard-hats, goggles, air-purifying respirators (not air supplied).
- Emergency showers, eye-wash stations, and portable containers of neutralizer solutions.
- Monitor for atmospheric testing (see confined space program).
- Spill control kits placed in areas of foreseeable spill possibilities.
- Fire hoses, brooms, mops, squeegees, etc. can be utilized under the direction of the Emergency Response Coordinator.

NOTE: The in-plant emergency response team members are trained and instructed to only address situations in the incipient stages. Team members will not be assigned to react to situations where there is a danger to life or health, matters beyond the expertise of the in-plant team can best be addressed by trained professionals. The primary purpose of the in-plant team members is to

minimize down-time, property damage, and to eliminate chemical contamination or releases.

The above listing is not meant to be all-inclusive of the resources available to the emergency-response team members. Dependent upon the nature of a particular emergency, there may be additional materials in stock that could be utilized to address the situation at hand.

ATTACHMENT E
POST CLOSURE PLAN

POST-CLOSURE INSPECTION PLAN

Quarterly inspections of the closed Equalization lagoon will be conducted by Randall-Textron or a qualified contractor for the duration of the post-closure care period. Repair of damaged areas may be conducted by Randall-Textron or a qualified contractor. A written inspection log will be maintained by Randall-Textron. This inspection log will record the inspector's name, inspection date, time, site conditions, problems, any suggested and implemented corrective action. This section details the specific areas the quarterly inspections will address, while Table 1 summarizes the inspection areas and specific items.

SECURITY CONTROL DEVICES

The closed Equalization Lagoon and plant area is surrounded by chain-link security fencing combined with buildings and/or structures that prevent casual access. The entrance gate into the facility is closed at all times with access controlled by an automatic gate activated within the plant building. During non-daylight hours, the access gate is locked and access can only be obtained by having Randall-Textron plant personnel unlock the gate. The fence perimeter will be inspected for signs of deterioration and vandalism. Any potential access points will be inspected and repaired, if appropriate, to ensure that security is maintained.

EROSION DAMAGE

The closed Equalization Lagoon will be carefully inspected for erosion problems including the composite cap, soil embankment, drainage diversion ditches, run-on control berms, and surrounding revegetated surfaces. The topsoil layer and vegetative cover over the Equalization Lagoon will be inspected for signs of erosion. The drainage ditches and run-on control berms

will also be inspected for erosion damage and debris that could potentially influence the free drainage of surface water. Repair of damaged areas may consist of any combination of earthwork, fertilization, revegetation, and/or removal of erosion debris to restore the affected areas to their proper condition.

COVER SETTLEMENT, SUBSIDENCE, AND DISPLACEMENT

The Equalization Lagoon stabilized waste cell, composite cap, and soil embankment will be inspected for signs of settlement, subsidence, and displacement. Such signs of distress will be noted and a plan for mitigation and restoration developed and implemented under the supervision of a Registered Professional Engineer. Any ponding, cracks, collapse, signs of infiltration or exposure of cell contents will be repaired by a qualified contractor to maintain the cell integrity and will be subject to acceptance by the Engineer.

VEGETATIVE COVER CONDITION

The vegetative cover over the entire area of the closed Equalization Lagoon will be reviewed as part of each inspection. The growth and coverage of the vegetation will be evaluated to ensure that adequate evapotranspiration and erosion control is provided at all times. Bare areas will be revegetated as they appear to provide adequate protection against continued erosion and infiltration. The vegetated areas will be fertilized as necessary to maintain sufficient growth. The vegetative cover will be routinely mowed by Randall-Textron. Randall-Textron may consult qualified contractors and/or the local Soil Conservation Office for assistance in selection of additional or replacement vegetation.

As part of the inspection program, no trees planted on the cap or anywhere within the limits of the drainage ditch. This will limit potential damage associated with root penetration.

DRAINAGE SYSTEM

The drainage ditches and run-on control berms will be inspected to ensure that proper site drainage is maintained and that proper run-off occurs from the area surrounding the Equalization Lagoon. Run-on control berms will be checked to keep run-off from areas outside the closed Equalization Lagoon from entering the lagoon. Any areas of ponding or erosion will be corrected by a qualified contractor. Routine maintenance of the drainage control network will be conducted to prevent standing water or excessive erosion, and to ensure that erosion or scour is effectively controlled.

BENCHMARK INTEGRITY

Benchmarks that may be used in the future surveys of the closed Equalization Lagoon will be checked for proper labeling, shifting, accessibility or other factors that would prohibit relocation of the benchmark. If benchmark damage occurs, the site closure surveyor should be notified to ensure validity of future surveys.

LEACHATE MANAGEMENT AND GAS VENTING

Based on the physical and chemical properties of the stabilized waste contained in the Equalization Lagoon containment cell, leachate management and gas venting are not issues requiring action.

TABLE 1

Closed Equalization Lagoon Inspection Summary

**INSPECTION SUMMARY
EQUALIZATION LAGOON CLOSURE INSPECTION SUMMARY**

TEXTRON AUTOMOTIVE COMPANY GRENADA, MISSISSIPPI			
Date:		Inspected By:	
1.	Perimeter Fence	Yes	No
	Breach in Fence	<input type="checkbox"/>	<input type="checkbox"/>
	If yes, response actions taken: _____ _____		
2.	Cap, Cell Berm, Control Berms	Yes	No
	Erosion Damage	<input type="checkbox"/>	<input type="checkbox"/>
	Ponding of Surface Water	<input type="checkbox"/>	<input type="checkbox"/>
	Deformation	<input type="checkbox"/>	<input type="checkbox"/>
	Bare Spots	<input type="checkbox"/>	<input type="checkbox"/>
	Loss of Integrity/Stability	<input type="checkbox"/>	<input type="checkbox"/>
	If yes, response actions taken: _____ _____		
3.	Drainage Ditches	Yes	No
	Erosion Damage	<input type="checkbox"/>	<input type="checkbox"/>
	Ponding	<input type="checkbox"/>	<input type="checkbox"/>
	Bare Spots	<input type="checkbox"/>	<input type="checkbox"/>
	Debris	<input type="checkbox"/>	<input type="checkbox"/>
	If yes, response actions taken: _____ _____		
4.	Groundwater Monitoring Wells & Surveying Benchmarks	Yes	No
	Damaged/Missing Cap or Lock	<input type="checkbox"/>	<input type="checkbox"/>
	Damaged Casing or Apron	<input type="checkbox"/>	<input type="checkbox"/>
	Illegible Well Label	<input type="checkbox"/>	<input type="checkbox"/>
	Plugged Well Screen	<input type="checkbox"/>	<input type="checkbox"/>
	Damaged Pump or Bailer	<input type="checkbox"/>	<input type="checkbox"/>
	Damaged, Moved, Covered or Unmarked Benchmark	<input type="checkbox"/>	<input type="checkbox"/>
	If yes, response actions taken: _____ _____		

ATTACHMENT F
WASTE MINIMIZATION CERTIFICATION OBJECTIVES

WASTE MINIMIZATION CERTIFICATION OBJECTIVES

The Waste Minimization Program should include the following elements:

1. Top Management Support

- Dated and signed policy describing management support for waste minimization and for implementation of a waste minimization plan.
- Description of employee awareness and training programs designed to involve employees in waste minimization planning and implementation to the maximum extent feasible.
- Description of how a waste minimization plan has been incorporated into management practices so as to ensure ongoing efforts with respect to product design, capital planning, production operations, and maintenance.

2. Characterization of Waste Generation

- Identification of types, amounts, and hazardous constituents of waste streams, with the source and date of generation.

3. Periodic Waste Minimization Assessments

- Identification of all points in a process where materials can be prevented from becoming a waste, or can be recycled.
- Identification of potential waste reduction and recycling techniques applicable to each waste, with a cost estimate for capital investment and implementation.
- Description of technically and economically practical waste reduction/recycling options to be implemented, and a planned schedule for implementation.
- Specific performance goals, preferably quantitative, for the source reduction of waste by stream. Whenever possible, goals should be stated as weight of waste generated per standard unit of production, as defined by the generator.

4. Cost Allocation System

- Identification of waste management costs for each waste, factoring in liability, transportation, recordkeeping, personnel, pollution control, treatment, disposal, compliance and oversight costs to the extent feasible.
- Description of how departments are held accountable for the wastes they generate.
- Comparison of waste management costs with costs of potential reduction and recycling techniques applicable to each waste.

5. Technology Transfer

- Description of efforts to seek and exchange technical information on waste minimization from other parts of the company, other firms, trade associations, technical assistance programs, and professional consultants.

6. Program Evaluation

- Description of types and amounts of hazardous waste reduced or recycled.
- Analysis and quantification of progress made relative to each performance goal established and each reduction technique to be implemented.
- Amendments to waste minimization plan and explanation.
- Explanation and documentation of reduction efforts completed or in progress before development of the waste minimization plan.
- Explanation and documentation regarding impediments to hazardous waste reduction specific to the individual facility.

ATTACHMENT G

SOLID WASTE MANAGEMENT UNIT SUMMARY

SOLID WASTE MANAGEMENT UNIT SUMMARY

G.1. List of solid waste management units (SWMUs) and areas of concern (AOCs) requiring a RCRA Facility Investigation (RFI):				
SWMU/AOC Number/Letter	SWMU/AOC Name	Unit Comment	Dates of Operation	Potentially Affected Media¹
2	Equalization Lagoon	Surface Impoundment	1961-1994	A, SS, SW, GW, S
3	On-Site Landfill	Landfill	1961-1967	A, SS, SW, GW, S
4	Sludge Lagoon	Surface Impoundment	1977-Present	A, SS, SW, GW, S
7	Outfall Ditch	Ditch	1961-Present	A, SS, SW, GW, S
12	Wet Well	Inground Tank	1977-Present	A, SS, SW, GW, S
14	Destruct Pit	Chromium Reduction Unit/ Holding Sump	1961-Present	A, SS, SW, GW, S
A	Former TCE Storage Area	Contamination Area	Approx. 1973-Present	A, SS, SW, GW, S
B	Former Toluene UST Area	Contamination Area	Late 1960s-Present	A, SS, SW, GW, S

¹Potentially Affected Media:

'A'--Air, 'SS'--Subsurface Gas, 'SW'--Surface Water, 'GW'--Ground Water, 'S'--Soil

G.2. List of solid waste management units (SWMUs) and areas of concern (AOCs) requiring no further action at this time:

SWMU/AOC Number/Letter	SWMU/AOC Name	Unit Comment	Dates of Operation	Potentially Affected Media ¹
1	Less-Than-90-Day Drum Storage Area	Container Storage Area	Mid 1980s-Present	N/A
5	Former Solid Waste Incinerators	Incinerators	1961-1996	N/A
6	Equipment Laydown Area	Laydown Area	1961-Present	N/A
8	Former Burn Area	Burn Area	1961-Approx. 1974	N/A
9	Sumps A, B, & C ²	Sumps	1961-Present	N/A
10	Waste Oil Tank	Above-Ground Storage Tank	1970s-Present	N/A
11	Waste Oil Catch Pans	Catch Pans	Approx. 1961-Present	N/A
16	Drainage Ditches	Ditches	1961-Present	N/A
17	Former IDW Drum Storage Area	Drum Storage Area	Early 1992-1993	N/A
18	Buffing Sludge Basement	Storage Basement	1961-Present	N/A
19	Buffing Sludge Rolloff	Rolloff Container	1985-Present	N/A
20	Plant Waste Containers	Hoppers and Drums	1961-Present	N/A

G.2. continued List of solid waste management units (SWMUs) and areas of concern (AOCs) requiring no further action at this time:				
SWMU/AOC Number/Letter	SWMU/AOC Name	Unit Comment	Dates of Operation	Potentially Affected Media¹
21	Parts Washers	Parts Washers	January 1990-Present	N/A
22	Cyclone Dust Collector	Air-Emissions Control Device	Approx. 1960-Present	N/A
23	Biohazard Container	Container	1960s-Present	N/A
24	Satellite Accumulation Areas A, B, C, D, & E ³	Satellite Accumulation Drums	Approx. 1976-Present	N/A
25	Scrap Metal Rolloffs	Rolloff Containers	1960s-Present	N/A
26	Trash Compactor	Compactor	1996-Present	N/A

¹Potentially Affected Media:

'A'--Air, 'SS'--Subsurface Gas, 'SW'--Surface Water, 'GW'--Ground Water, 'S'--Soil, 'N/A'--Not Applicable

²Sumps A, B, & C are defined as follows:

- A Waste Oil Sump
- B Main Waste Oil Sump
- C Verson Press Waste Oil Sump

³Satellite Accumulation Areas A, B, C, D, & E are defined as follows:

- A Toluene Recovery Drum
- B Waste Toluene Drum
- C Spent Paint Filters Drum
- D Waste Paint Rags Drum
- E TCE Recovery Drum

G.3. List of solid waste management units (SWMUs) and areas of concern (AOCs) requiring Confirmatory Sampling:

SWMU/AOC Number/Letter	SWMU/AOC Name	Unit Comment	Dates of Operation	Potentially Affected Media ¹
13	Wastewater Treatment Plant	Treatment Plant	1977-Present	A, SS, SW, GW, S
15	Process Sewers	Sewer System	1961-Present	A, SS, SW, GW, S
C	Fuel Tank Farm Containment Area	Secondary Containment	1960s-Present	A, SS, SW, GW, S

¹Potentially Affected Media:

'A'--Air, 'SS'--Subsurface Gas, 'SW'--Surface Water, 'GW'--Ground Water, 'S'--Soil

ATTACHMENT H

RCRA FACILITY INVESTIGATION (RFI) OUTLINE

RCRA FACILITY INVESTIGATION (RFI) OUTLINE

The purpose of the RFI portion of the RCRA corrective action process is to evaluate the nature and extent of releases of hazardous wastes and/or hazardous constituents and to gather necessary data to support the Corrective Measures Study (CMS) and/or Interim Measures. Planning for the investigation is best accomplished through a logical progression of tasks:

1. gather information on the source of the release(s) to the environment (Source Characterization),
2. gather information on the physical aspects of the environment which will affect the migration and fate of the release and identification of exposure pathways for both humans and non-human members of the environment (Environmental Setting),
3. use Source Characterization and Environmental Setting to develop a conceptual model of the release which will be used to plan and conduct a program to define the nature, rate and extent of the release (Sampling and Analysis Plan).

An RFI Work Plan and RFI Report are generally required elements of the RCRA corrective action process. The requirements for a full, detailed RFI are listed in this Appendix. EPA recognizes that each facility is unique. Therefore, the scope and requirements of the RFI shall be focused to fit the complexity of the site-specific situation. The work plan requirements listed in this Appendix in no way limit the site-specific opportunities for a Permittee. For example, the RFI may be implemented in phases. Relevant information contained in previously developed documents, such as a RCRA Part B permit application, may be referenced as appropriate, but must be summarized in either the RFI Work Plan or the RFI Report. In addition, EPA understands that Risk Assessments are becoming more widely utilized to place characterization information into context and to aid in determining remedial solutions. If a Risk Assessment is expected to be performed in the future, note that Region 4 has developed a series of Risk Bulletins to provide Permittees and their contractors with the general format and process Region 4 expects a Risk Assessment to follow.

In some cases, it may be possible to implement the RFI concurrent with the CMS (also see Appendix C). This approach can save time and money because the earlier in the corrective action process potential remedies can be identified, the more effectively information gathering can be focused. The Agency anticipates that a concurrent RFI/CMS approach may be appropriate in the following types of situations, among others: facilities where removal remedies have been proposed by the owner/operator, facilities with straightforward remedial solutions or where presumptive remedies can be applied, facilities where few remedial options are available, and facilities where the remedy is phased. The Agency will determine on a case-by-case basis if a concurrent RFI/CMS is appropriate. Because of the unique data collection requirements necessary for a remedial solution which includes natural attenuation of contaminants in groundwater, if natural attenuation is expected to be part of the remedial solution, then the

Sampling and Analysis Plan should be crafted to include monitoring of specific water quality parameters unique to natural attenuation (e.g., nitrites/nitrates, ferrous iron, sulfides, dissolved oxygen, methane, hydrogen, etc.).

I. RFI WORK PLAN REQUIREMENTS - ELEMENTS OF THE RFI WORK PLAN

The RFI Work Plan shall include, at a minimum, the following elements:

A. Introduction - Summary of any relevant existing assessment data

The Permittee shall describe the purpose or objective of the RFI Work Plan and provide a summary of any existing environmental data which is relevant to the investigation. The summary should provide the following items, at a minimum:

1. land ownership history,
2. facility operating dates,
3. facility's product(s),
4. raw materials used in facility operations, wastes generated,
5. nature and extent of any known contamination,
6. summary of an ongoing Interim Measures and past assessments,
7. summary of permit objective and how this objective will be satisfied.

B. Environmental Setting

The Permittee shall provide information on the environmental setting at the facility. The Permittee shall characterize the Environmental Setting as it relates to identified sources, pathways and areas of releases of hazardous constituents from Solid Waste Management Units (SWMUs) and/or Areas of Concern (AOCs). Data gaps pertinent to characterization of releases shall be identified and provisions made in Section E to obtain the relevant information to fill the data gap. The Environmental Setting shall cover the following items, at a minimum:

1. Hydrogeology

The Permittee shall provide a summary of the hydrogeologic conditions at the facility. This discussion shall include, but not be limited to, the following information:

- a. A description of the regional and facility specific geologic and hydrogeologic characteristics affecting ground-water flow beneath the facility, including:

- i) Regional and facility specific stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts;
 - ii) Structural geology: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, metamorphic foliation, etc.);
 - iii) Depositional history;
 - iv) Regional and facility specific ground-water flow patterns (porous media, fracture media, karst media); and
 - v) Identification and characterization of areas and amounts of recharge and discharge (springs in karst terrane, base level streams and rivers).
- b. An analysis of any topographic features that might influence the ground-water flow system (e.g., sinkholes and sinking streams in karst terranes).
- c. Based on any existing field data, tests (e.g., pump tests, tracer tests), and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (I. e., the aquifers and any intervening saturated and unsaturated units), including:
 - i) Hydraulic conductivity and porosity (total and effective), groundwater flow velocity, groundwater basin discharge;
 - ii) Lithology, grain size, sorting, degree of cementation;
 - iii) An interpretation of hydraulic interconnections between saturated zones (i.e., aquifers) and surface waters; and
 - iv) The attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content, etc.).
- d. Based on data obtained from groundwater monitoring wells and piezometers installed upgradient, water wells and/or springs downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:
 - i) Water-level contour and/or potentiometric maps, including seasonal variations;
 - ii) Hydrologic cross sections showing vertical gradients;
 - iii) The flow system, including the vertical and horizontal components of flow; and

- iv) Any temporal changes in hydraulic gradients, for example, due to tidal or seasonal influences and for karst terrane, stormflow.
- e. A description of man-made influences that may affect the hydrology of the site, identifying:
 - i) Local water-supply and production wells with an approximate schedule of pumping; and
 - ii) Man-made hydraulic structures (pipelines, french drains, ditches, roofs, runways, parking lots, etc.).

2. Soils

The Permittee shall provide an explanation of the soil and rock units above the water table in the vicinity of contaminant release(s). This summary may include, but not be limited to, the following types of information as appropriate:

- i) Surface soil distribution;
- ii) Soil profile, including ASTM classification of soils;
- iii) Transects of soil stratigraphy;
- iv) Hydraulic conductivity (saturated and unsaturated);
- v) Relative permeability;
- vi) Bulk density;
- vii) Porosity;
- viii) Soil sorption capacity;
- ix) Cation exchange capacity (CEC);
- x) Soil organic content;
- xi) Soil pH;
- xii) Particle size distribution;
- xiii) Depth of water table;
- xiv) Moisture content;
- xv) Effect of stratification on unsaturated flow;
- xvi) Infiltration;
- xvii) Evapotranspiration;
- xviii) Storage capacity;
- xix) Vertical flow rate; and
- xx) Mineral content.

3. Surface Water and Sediment

The Permittee shall provide a description of the surface water bodies in the vicinity of the facility. This summary may include, but not be limited to, the following activities and information:

- a. Description of the temporal and permanent surface water bodies including:
 - i) For lakes and estuaries: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;
 - ii) For impoundments: location, elevation, surface area, depth, volume, freeboard, and construction and purpose;
 - iii) For streams, ditches, and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, flooding tendencies (i.e., 100 year event), discharge point(s), and general contents.
 - iv) Drainage patterns; and
 - v) Evapotranspiration.
- b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients, chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.
- c. Description of sediment characteristics including:
 - i) Deposition area;
 - ii) Thickness profile; and
 - iii) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.)

4. Air

The Permittee shall provide information characterizing the climate in the vicinity of the facility. Such information may include, but not be limited to:

- a. A description of the following parameters:

- i) Annual and monthly rainfall averages;
 - ii) Monthly temperature averages and extremes;
 - iii) Wind speed and direction;
 - iv) Relative humidity/dew point;
 - v) Atmospheric pressure;
 - vi) Evaporation data;
 - vii) Development of inversions; and
 - viii) Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence (i.e., Hurricanes)
- b. A description of topographic and man-made features which affect air flow and emission patterns, including:
- i) Ridges, hills or mountain areas;
 - ii) Canyons or valleys;
 - iii) Surface water bodies (e.g., rivers, lakes, bays, etc.); and
 - iv) Buildings.

C. Source Characterization

For those sources from which releases of hazardous constituents have been detected, the Permittee shall provide analytical data to completely characterize the wastes and the areas where wastes have been placed, to the degree that is possible without undue safety risks, including: type, quantity; physical form; disposition (containment or nature of deposits); and facility characteristics affecting release (e. g., facility security, and engineering barriers). Data gaps on source characterization shall be identified and provisions made in Section E to obtain the relevant information to fill the data gap. This summary shall include quantification of the following specific characteristics, at each source area:

1. Unit/Disposal Area Characteristics:
- a. Location of unit/disposal area;
 - b. Type of unit/disposal area;
 - c. Design features;
 - d. Operating practices (past and present)
 - e. Period of operation;
 - f. Age of unit/disposal area;
 - g. General physical conditions; and
 - h. Method used to close the unit/disposal area.

2. Waste Characteristics:

- a. Type of wastes placed in the unit;
 - i) Hazardous classification (e. g., flammable, reactive, corrosive, oxidizing or reducing agent);
 - ii) Quantity; and
 - iii) Chemical composition.
- b. Physical and chemical characteristics such as:
 - i) Physical form (solid, liquid, gas);
 - ii) Physical description (e.g., powder, oily sludge);
 - iii) Temperature;
 - iv) pH;
 - v) General chemical class (e.g., acid, base, solvent);
 - vi) Molecular weight;
 - vii) Density;
 - viii) Boiling point;
 - ix) Viscosity;
 - x) Solubility in water;
 - xi) Cohesiveness of the waste; and
 - xii) Vapor pressure.
- c. Migration and dispersal characteristics of the waste such as:
 - i) Sorption capability;
 - ii) Biodegradability, bioconcentration, and biotransformation;
 - iii) Photodegradation rates;
 - iv) Hydrolysis rates; and
 - v) Chemical transformations.

D. Potential Receptors

The Permittee shall provide data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. Data gaps pertinent to receptor analysis shall be identified and provisions made in Section E to obtain the relevant information to fill the data gap. The following characteristics shall be identified at a minimum:

1. Current local uses and planned future uses of groundwater:
 - a. Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial);
 - b. Location of groundwater users, to include withdrawal and discharge wells and springs, within one mile of the impacted area.

The above information should also indicate the aquifer or hydrogeologic unit used and/or impacted for each item.

2. Current local uses and planned future uses of surface waters directly impacted by the facility:
 - a. Domestic and municipal (e.g., potable and lawn/gardening watering);
 - b. Recreational (e.g., swimming, fishing);
 - c. Agricultural;
 - d. Industrial; and
 - e. Environmental (e.g., fish and wildlife propagation).
3. Human use of or access to the facility and adjacent lands, including but not limited to:
 - a. Recreation;
 - b. Hunting;
 - c. Residential;
 - d. Commercial; and
 - e. Relationship between population locations and prevailing wind direction.
4. A general description of the biota in surface water bodies on, adjacent to, or affected by the facility.
5. A general description of the ecology within the area adjacent to the facility.
6. A general demographic profile of the people who use have access to the facility and adjacent land, including, but not limited to: age; sex; and sensitive subgroups.
7. A description of any known or documented endangered or threatened species near the facility.

E. Sampling and Analysis Plan(s) for Characterization of Releases of Hazardous Waste/Hazardous Constituents

The Permittee shall prepare a plan to document all monitoring procedures necessary to characterize the extent, fate and transport of releases (i.e., identify sample locations, sample procedures and sample analysis to be performed during the investigation to characterize the environmental setting, source, and releases of hazardous constituents, so as to ensure that all information and data are valid and properly documented). The sampling strategy and procedures shall be in accordance with EPA Region 4 Environmental Compliance Branch's Standard Operating Procedure and Quality Assurance Manual (SOP) (most recent version). Any deviations from this reference must be requested by the applicant and approved by EPA. If a Risk Assessment is expected to be performed once release characterization is complete or nearly complete, Data Quality Objectives (DQO) for a Human Health Risk Assessment requires a Data Quality Objective of Level 3 or greater.

The Sampling and Analysis Plan must specifically discuss the following unless the SOP procedures are specifically referenced.

1. Sampling Strategy

- a. Selecting appropriate sampling locations, depths, etc.;
- b. Obtaining all necessary ancillary data;
- c. Determining conditions under which sampling should be conducted;
- d. Determining which media are to be sampled (e.g., groundwater, air, soil, sediment, subsurface gas);
- e. Determining which parameters are to be measured and where;
- f. Selecting the frequency of sampling and length of sampling period;
- g. Selecting the types of samples (e.g., composite vs. grab) and number of samples to be collected.

2. Sampling Procedures

- a. Documenting field sampling operations and procedures, including;
 - i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, preservatives, and absorbing reagents);
 - ii) Procedures and forms for recording the exact location and specific considerations associated with sample acquisition;

- iii) Documentation of specific sample preservation method;
 - iv) Calibration of field instruments;
 - v) Submission of appropriate blanks (e.g., field, equipment, trip, etc.);
 - vi) Potential interferences present at the facility;
 - vii) Construction materials and techniques, associated with monitoring wells and piezometers;
 - viii) Field equipment listing and sampling containers;
 - ix) Sampling order; and
 - x) Decontamination procedures.
- b. Selecting appropriate sample containers;
 - c. Sampling preservation; and
 - d. Chain-of-custody, including:
 - i) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment; and
 - ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.
 - iii) Chain-of-custody seals for sample containers and shipping coolers.

3. Sample Analysis

Sample analysis shall be conducted in accordance with SW-846: "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods" (most recent version) or an alternate approved method. The sample analysis section of the Sampling and Analysis Plan shall specify the following:

- a. Chain-of-custody procedures, including:
 - i) Identification of a responsible party to act as sampling custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;
 - ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and
 - iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersment for analysis.
- b. Sample storage (e.g., maximum holding times for constituents);

- c. Sample preparation methods;
- d. Analytical Procedures, including:
 - i) Scope and application of the procedure;
 - ii) Sample matrix;
 - iii) Potential interferences;
 - iv) Precision and accuracy of the methodology; and
 - v) Method Detection Limits; and
 - vi) Practical Quantitative Limits
- e. Calibration procedures and frequency;
- f. Data reduction, validation and reporting;
- g. Internal quality control checks, laboratory performance and systems audits and frequency, including:
 - i) Method blank(s);
 - ii) Laboratory control sample(s);
 - iii) Calibration check sample(s);
 - iv) Replicate sample(s);
 - v) Matrix-spiked sample(s);
 - vi) "Blind" quality control sample(s);
 - vii) Control charts;
 - viii) Surrogate samples;
 - ix) Zero and span gases; and
 - x) Reagent quality control checks.
- h. External quality control checks by EPA, including:
 - i) Spikes and blanks at sampling events for which EPA or its technical representative provides oversight; and
 - ii) The equivalent of a CLP data package for samples split with EPA or for which EPA specifically requests the package.
- I. Preventive maintenance procedures and schedules;
- j. Corrective action (for laboratory problems); and
- k. Turnaround time.

F. Data Management Plan

The Permittee shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

The data record shall include the following:

- a. Unique sample or field measurement code;
- b. Sampling or field measurement location and sample or measurement type;
- c. Sampling or field measurement raw data;
- d. Laboratory analysis ID number;
- e. Property or component measures; and
- f. Result of analysis (e.g. concentration, data qualifiers).

2. Tabular Displays

The following data shall be presented in tabular displays:

- a. Unsorted (raw) data;
- b. Results for each medium, or for each constituent monitored;
- c. Data reduction for statistical analysis, as appropriate;
- d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
- e. Summary data

3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.):

- a. Display sampling location and sampling grid;
- b. Indicate boundaries of sampling area, and area where more data are required;
- c. Display geographical extent of contamination, both horizontally and vertically;

- d. Illustrate changes in concentration in relation to distances from the source, time, depth or other parameters; and
- e. Indicate features affecting inter-media transport and show potential receptors.

G. Project Management Plan - Schedule of Implementation

Permittee shall prepare a Project Management Plan which will cover qualifications of personnel categories and the management control structure for the project. The Permittee shall also provide a schedule for completing the planned RFI activities. The schedule shall be as specific as possible (i.e., it should indicate the number of days/weeks/months required for each major work plan task).

II. RFI REPORT REQUIREMENTS - ELEMENTS OF THE RFI REPORT

The RFI Report shall include, at a minimum, the following elements:

A. Introduction

The Permittee shall describe the purpose of the RFI Work Plan and provide a summary description of the project.

B. Environmental Setting

The Permittee shall describe the Environmental Setting in and around the facility. The RFI Work Plan should contain some, if not all, of the information on the Environmental Setting. Any information collected during work plan implementation which clarifies or improves understanding of the Environmental Setting should be provided in this section.

C. Source Characterization

The Permittee shall summarize the sources of contamination and nature of releases identified at the facility. The RCRA Facility Assessment and the RFI Work Plan should contain some, if not all, of the information on Source Characterization. Any information collected during work plan implementation or obtained from the sources (e.g., voluntarily or from other Environmental Programs) which directly addresses Source Characterization should be provided in this section.

D. Sampling and Analysis Results

The Permittee shall present data results obtained pursuant to the RFI Work Plan. The Permittee shall identify any work plan proposals which were not completed and explain why such actions were not finished. The Permittee shall also present its analysis/interpretation of how the sampling data meet the RFI objective and how the sampling data fits or modifies the contaminant conceptual model. For all analytical data, the Permittee shall discuss the results of data quality/data review.

E. Data Quality Assurance/Data Quality Data Review

The Permittee shall perform a Quality Assurance/Quality Control data review on all data present in the RFI. The Quality Assurance/Quality Control data review shall be in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA-540/R94-013) and the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA-540/R94-012). The data review shall address the following, at minimum:

- a. Holding times;
- b. Blanks;
- c. Laboratory Control Samples;
- d. Field Duplicates;
- e. Surrogate Recoveries;
- f. Matrix Spike/Matrix Spike Duplicates
- g. Data Assessment - Data Usability.

F. Conclusions

The Permittee shall summarize the major conclusions reached after analysis of the environmental setting, source characterization, sampling and analysis results and data quality. Any data gaps, needed to complete characterization of the scope and extent of the releases from SWMUs and/or AOCs or to refine further the contaminant conceptual model, shall be identified and recommendations made in the Recommendations Section of the report.

G. Recommendations

The Permittee shall provide its recommendations on what, if any, further action is needed to complete the characterization of release(s) from SWMUs and/or AOCs.

H. Work Plan for Additional Investigations

If further investigations are determined to be needed to complete the objective of the RFI, then the Permittee shall provide a work plan to complete characterization of the release(s).

ATTACHMENT I

Corrective Measures Study (CMS) Outline

CORRECTIVE MEASURE STUDY (CMS) OUTLINE

The purpose of the CMS portion of the RCRA corrective action process is to identify and evaluate potential remedial alternatives for the releases of hazardous constituents that have been identified at the facility through the RFI or other investigations to need further evaluation. The scope and requirements of the CMS are balanced with the expeditious initiation of remedies and rapid restoration of contaminated media. The scope and requirements of the CMS should be focused to fit the complexity of the site-specific situation. It is anticipated that Permittee's with sites with complex environmental problems may need to evaluate a number of technologies and corrective measure alternatives. For other facilities, however, the evaluation of a single corrective measure alternative may be adequate. Therefore, a streamlined or focused approach to the CMS may be initiated. Information gathered during any stabilizations or interim measures will be used to augment the CMS and in cases where corrective action goals are met, may be a substitute for the final CMS.

Regardless of whether a streamlined/focused or a detailed CMS is required, a CMS Work Plan and CMS Report are generally required elements. The requirements for a full, detailed CMS are listed below. The Agency has the flexibility not to require sections of the plan and/or report, where site-specific situations indicate that all requirements are not necessary. Additionally, the Agency may require additional studies besides these discussed in order to support the CMS.

I. Corrective Measures Study (CMS) Work Plan

A. Elements of the CMS Work Plan

The Corrective Measures Study (CMS) Work Plan shall include at a minimum the following elements:

1. A brief site-specific description of the overall purpose of the CMS;
2. A brief description of the corrective measure objectives, including proposed target media cleanup standards (e.g., promulgated federal and state standards) and preliminary points of compliance or a description of how a risk assessment will be performed (e.g., guidance documents);
3. A brief description of the specific corrective measure technologies and/or corrective measure alternatives which will be studied;
4. A brief description of the general approach to investigating and evaluating potential corrective measures;

5. A detailed description of any proposed pilot, laboratory and/or bench scale studies;
6. A proposed outline for the CMS Report including a description of how information will be presented;
7. A brief description of overall project management including overall approach, levels of authority (include organization chart), lines of communication, project schedules, budget and personnel. Include a description of qualifications for personnel directing or performing the work;
8. A project schedule that specifies all significant steps in the process and when key documents (e.g., CMS Progress Reports, draft CMS Report) are to be submitted to the Agency;
9. A detailed Public Involvement Plan.

II. Corrective Measures Study (CMS) Report

The detail of a CMS may vary based upon the complexity of the site, on-going Interim Measures, etc. However, the CMS Report may include the following elements:

A. Introduction/Purpose

The Permittee shall describe the purpose of the CMS Report and provide a summary description of the project.

B. Description of Current Situation

The Permittee shall submit a summary and an update to the information describing the current situation at the facility and the known nature and extent of the contamination as documented by the RCRA Facility Investigation (RFI) Report. This discussion should concentrate on those issues which could significantly affect the evaluation and selection of the corrective measures alternative(s). The Permittee shall provide an update to information presented in the RFI regarding previous response activities and interim measures which have or are being implemented at the facility. The Permittee shall also make a facility-specific statement of the purpose for the response, based on the results of the RFI. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

5. A detailed description of any proposed pilot, laboratory and/or bench scale studies;
6. A proposed outline for the CMS Report including a description of how information will be presented;
7. A brief description of overall project management including overall approach, levels of authority (include organization chart), lines of communication, project schedules, budget and personnel. Include a description of qualifications for personnel directing or performing the work;
8. A project schedule that specifies all significant steps in the process and when key documents (e.g., CMS Progress Reports, draft CMS Report) are to be submitted to the Agency;
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C. Establishment of Proposed Media Specific Cleanup Standards

The Permittee shall describe the proposed media cleanup standards and point of compliance. The standards must be either background, promulgated federal and state standards or risk-derived standards. If media clean-up standards are not proposed, then the Agency will unilaterally propose setting media clean-up standards to either background, promulgated federal and state standards or the most conservative risk-derived standards.

D. Identification, Screening and Development of Corrective Measure Technologies

1. Identification: List and briefly describe potentially applicable technologies for each affected media that may be used to achieve the corrective action objectives. Include a table that summarizes the available technologies.

The Permittee should consider innovative treatment technologies, especially in situations where there are a limited number of applicable corrective measure technologies.

2. Screening: The Permittee shall screen the corrective measure technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations.

Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

- a. Site Characteristics: Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration.
- b. Waste Characteristics: Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics should be eliminated from consideration. Waste characteristics particularly affect the feasibility of in-situ methods, direct treatment methods, and land disposal (on/off-site).

- c. **Technology Limitations:** During the screening process, the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

3. **Corrective Measure Development:** The Permittee shall assemble the technologies that pass the screening step into specific alternatives that have the potential to meet the corrective action objectives for each media. Options for addressing less complex sites could be relatively straightforward and may only require evaluation of a single or limited number of alternatives. Each alternative may consist of an individual technology or a combination used in sequence (i.e., treatment train). Different alternatives may be considered for separate areas of the facility, as appropriate. List and briefly describe each corrective measure alternative.

E. Evaluation of a Final Corrective Measure Alternative

For each remedy which warrants a more detailed evaluation (i.e., those that passed through the screening step), including those situations when only one remedy is being proposed, the Permittee shall provide detailed documentation of how the potential remedy will comply with each of the standards listed below. These standards reflect the major technical components of remedies including cleanup of releases, source control and management of wastes that are generated by remedial activities. The specific standards are as follows:

1. Protect human health and the environment.
2. Attain media cleanup standards set by EPA.
3. Control the source of releases so as to reduce or eliminate, to the extent practicable, further releases that may pose a threat to human health and the environment.
4. Comply with applicable standards for management of wastes.
5. Other factors.

In evaluating the selected alternative or alternatives, the Permittee shall prepare and submit information that documents that the specific remedy will meet the standards listed above. The following guidance should be used in completing this evaluation.

1. Protect Human Health and the Environment

Corrective action remedies must be protective of human health and the environment. Remedies may include those measures that are needed to be protective, but are not directly related to media cleanup, source control or management of wastes. An example would be a requirement to provide alternative drinking water supplies in order to prevent exposures to releases from an aquifer used for drinking water purposes. Therefore, the Permittee shall provide a discussion of any short term remedies necessary to meet this standard, as well as discuss how the corrective measures alternative(s) meet this standard.

2. Attain Media Cleanup Standards

Remedies will be required to attain media cleanup standards. As part of the necessary information for satisfying this requirement, the Permittee shall address whether the potential remedy will achieve the remediation objectives. An estimate of the time frame necessary to achieve the goals shall be included. Contingent remedies may be proposed if there is doubt if the initial remedy will be successful (*e.g.*, contingent remedies to innovative technologies).

3. Control of Sources of Releases

The Permittee shall address the issue of whether source control measures are necessary, and if so, the type of actions that would be appropriate. Any source control measure proposed should include a discussion on how well the method is anticipated to work given the particular situation at the facility and the known track record of the specific technology.

4. Comply With any Applicable Standards for Management of Wastes

The Permittee shall include a discussion of how the specific waste management activities will be conducted in compliance with all applicable state and federal regulations (*e.g.*, closure requirements, LDRs)

5. Other Factors

There are five general factors that will be considered as appropriate by EPA in selecting/approving a remedy that meets the four standards listed above. These five decision factors include:

- a. Long-term reliability and effectiveness;

- b. Reduction in the toxicity, mobility or volume of wastes;
- c. Short-term effectiveness;
- d. Implementability; and
- e. Cost.

Examples of the type of information to include are provided below:

- a. Long-term reliability and effectiveness: The Permittee may consider whether the technology, or combination of technologies, have been used effectively under analogous site conditions, whether failure of any one technology in the alternative would have any immediate impact on receptors, and whether the alternative would have the flexibility to deal with uncontrollable changes at the site. Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. In addition, each corrective measure alternative should be evaluated in terms of the projected useful life of the overall alternative and of its component technologies. Useful life is defined as the length of time the level of effectiveness can be maintained.
- b. Reduction in the toxicity, mobility or volume of wastes: As a general goal, remedies will be preferred that employ techniques that are capable of eliminating or substantially reducing the potential for the wastes in SWMUs and/or contaminated media at the facility to cause future environmental releases. Estimates of how the corrective measure alternative will reduce toxicity, mobility and or volume of the waste is required and may be accomplished through a comparison of initial site conditions to expected post-corrective measures conditions.
- c. Short-term effectiveness: The Permittee shall evaluate each corrective measure alternative for short-term effectiveness. Possible factors to consider are fire, explosion, exposure to hazardous constituents and potential threats associated with the treatment, excavation, transportation and re-disposal or containment of the waste material.
- d. Implementability: Information to consider when assessing implementability include:
 - i) The administrative activities needed to implement the corrective measure alternative (e.g. permits, rights of way, etc.) and the length of time these activities will take;

- ii) The constructibility, time for implementation, and time for beneficial results;
 - iii) The availability of adequate off-site treatment, storage capacity, disposal services, needed technical services and materials; and
 - iv) The availability of prospective technologies for each corrective measure alternative.
- e. Cost: The Permittee shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs. The capital costs shall include, but are not limited to, costs for: engineering, site preparation, construction, materials, labor, sampling/analysis, waste management/disposal, permitting, health and safety measures, etc. The operation and maintenance costs shall include labor, training, sampling and analysis, maintenance materials, utilities, waste disposal and/or treatment, etc. Costs shall be calculated as the net present value of the capital and operation and maintenance costs.

F. Justification and Recommendation of the Corrective Measure or Measures

The Permittee shall justify and recommend in the CMS Report a corrective measure alternative for consideration by the Agency. Such a recommendation should include a description and supporting rationale for the preferred alternative that is consistent with the corrective action standards and remedy selection decision factors discussed above. In addition, this recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Trade-offs among health risks, environmental effects, and other pertinent factors shall be highlighted. The Regional Administrator will select the corrective measure alternative or alternatives to be implemented based on the results presented in the CMS Report.

ATTACHMENT J
Schedule of Compliance

Schedule of Compliance	Due Date
Notification of Newly Identified SWMUs and AOCs <i>Condition V.B.1. and Condition V.B.2.</i>	Within fifteen (15) calendar days of discovery
SWMU Assessment Report <i>Condition V.B.3.</i>	Within ninety (90) calendar days of notification
Notification for Newly Discovered Releases at Previously Identified SWMUs and AOCs <i>Condition V.C.1.</i>	Within fifteen (15) calendar days of discovery
Confirmatory Sampling Work Plan for SWMUs or AOCs identified in Attachment G.3. <i>Condition V.D.1</i>	Within forty-five (45) calendar days of notification by the Executive Director (ED)
Confirmatory Sampling Work Plan for SWMUs identified under Condition V.B.4. or AOCs identified under Condition V.B.1. <i>Condition V.D.2.</i>	Within forty-five (45) calendar days of notification by the Executive Director (ED)
Confirmatory Sampling Report <i>Condition V.D.5.</i>	In accordance with the approved CS Work Plan
RFI Work Plan for SWMU(s) and AOC(s) identified under Condition V.A.1. <i>Condition V.E.1.a.</i>	Within ninety (90) calendar days of notification by the ED

Schedule of Compliance	Due Date
RFI Work Plan for SWMU(s) and AOC(s) Identified under Condition V.B.4., Condition V.C.2., or Condition V.D.6. <i>Condition V.E.1.b.</i>	Within ninety (90) calendar days after receipt of notification by Executive Director (ED) which SWMUs or AOCs require an RFI
Draft RFI Report <i>Condition V.E.3.a.</i>	In accordance with the approved RFI Work Plan
Final RFI Report <i>Condition V.E.3.c.</i>	Within thirty (30) calendar days after receipt of ED's final comments on Draft RFI Report
RFI Progress Reports <i>Condition V.E.3.d.</i>	Quarterly, beginning ninety (90) calendar days from the start date specified by the ED*
Interim Measures Work Plan <i>Condition V.F.1.a.</i>	Within thirty (30) calendar days of notification by ED
Interim Measures Progress Reports <i>Condition V.F.3.a.</i>	In accordance with the approved Interim Measures Work Plan ** or semi-annually for Permittee initiated IM
Interim Measures Report <i>Condition V.F.3.b.</i>	Within ninety (90) calendar days of completion
CMS Work Plan <i>Condition V.G.1.a.</i>	Within ninety (90) calendar days of notification by ED that a CMS is required

Schedule of Compliance	Due Date
Implementation of CMS Work Plan <i>Condition V.G.2.</i>	Within fifteen (15) calendar days after receipt of ED approval of Plan
Draft CMS Report <i>Condition V.G.3.a.</i>	In accordance with the schedule in the approved CMS Work Plan
Final CMS Report <i>Condition V.G.3.a.</i>	Within thirty (30) calendar days of ED's final comments on Draft CMS Report
Demonstration of Financial Assurance <i>Condition V.H.3.</i>	Within one hundred twenty (120) calendar days after permit modification for remedy
Noncompliance/Imminent Hazard Report <i>Condition I.E.14.</i>	Oral within 24 hours and written within fifteen (15) calendar days of becoming aware of the hazardous circumstances
<p>The above reports must be signed and certified in accordance with MHWMR 270.11.</p> <p>* This applies to Work Plan execution that requires more than one hundred eighty (180) calendar days</p> <p>** This applies to Work Plan execution that requires more than one year.</p>	

ATTACHMENT K

Action Levels

ACTION LEVELS

I. Definition

Action levels are conservative health-based concentrations of hazardous constituents determined to be indicators for the protection of human health or the environment. Action levels shall be set for all hazardous constituents, a subset of hazardous wastes, identified in the RFI Report(s) or for those hazardous constituents which the Executive Director has reason to believe may have been released from a solid waste management unit (SWMU) or Area of Concern (AOC) at the facility. Should the concentration of a hazardous constituent(s) in an aquifer, surface water, soils, or air exceed its action level for any environmental medium, the Executive Director may require the Permittee to conduct a Corrective Measure Study (CMS) to meet the requirements of permit Condition V.G., Permit Attachment I, and MHWMR 264.101. If the Executive Director determines that a constituent(s) released from a SWMU or AOC in quantities below its respective action level(s) may pose a threat to human health or the environment, given site-specific exposure conditions, cumulative effects, ecological concerns, etc., then the Executive Director has the authority to require a CMS to meet the requirements of permit Condition V.G., Permit Attachment I, and MHWMR 264.101.

Action levels shall be concentration levels which satisfy the following criteria:

- A.
 - 1. Is derived in a manner consistent with EPA guidelines for assessing human and environmental health risks from hazardous constituents; and
 - 2. Is based on scientifically valid studies conducted in accordance with the Toxic Substances Control Act (TSCA) Good Laboratory Practice Standards, or equivalent; and
 - 3. For human health action levels to address carcinogens, represents a concentration associated with an excess upper bound lifetime cancer risk of 1×10^{-6} for carcinogens due to continuous constant lifetime exposure; and
 - 4. For human health action levels to address systemic toxicants, represents a concentration to which the human population (including sensitive subgroups) could be exposed on a daily basis that is likely to be without appreciable risk of deleterious effects during a lifetime.
- B. For constituent(s) detected in groundwater, air, surface water, or soils, for which a concentration level that meets the criteria specified in section I.A.1 through I.A.4

of this appendix is not available or possible, the action level for the constituent(s) shall be the background concentration of the constituent(s).

II. Groundwater

- A. Action levels for constituents in groundwater shall be concentrations specified as:
1. MCLs; or
 2. For constituents for which MCLs have not been promulgated, a concentration which satisfies the criteria specified in section I.A.1 through I.A.4 of this appendix shall be calculated.
- B. In deriving human health action levels for constituents for which MCLs have not been promulgated, the recommended equations/assumptions shall be that followed by Region 3 in its Quarterly Risk-Based Concentration Tables. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Executive Director reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through I.A.4.

III. Surface Water

- A. Action levels for constituents in surface water shall be concentrations specified as:
1. Water Quality Standards established pursuant to the Clean Water Act by the State in which the facility is located, where such standards are expressed as numeric values; or
 2. Numeric interpretations of State narrative water quality standards where water quality standards expressed as numeric values have not been established by the State; or
 3. MCLs for constituents in surface water designated by the State for drinking water supply, where numeric values or numeric interpretations, described in paragraphs 1 and 2, are not available; or
 4. For constituents in surface waters designated by the State for drinking water supply for which numeric values, numeric interpretations, or MCLs are not available, a concentration which meets the criteria specified in section I.A.1 through I.A.4 of this appendix shall be calculated assuming exposure through consumption of the water contaminated with the constituent; or

5. For constituents in surface waters designated for use or uses other than drinking water supply and for which numeric values or numeric interpretations have not been established, a concentration established by the EPA Executive Director which meets the criteria specified in section I.A.1 through I.A.4 of this appendix shall be calculated.

- B. In deriving human health action levels for constituents in surface water, the recommended equations/assumptions shall be that followed by Region 3 in its Quarterly Risk-Based Concentration Tables. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Executive Director reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through I.A.4.

IV. Air

- A. Action levels for constituents in air shall be defined as concentrations which meet the criteria specified in section I.A.1 through I.A.4. The action levels for air shall be measured or estimated at the facility boundary, or another location closer to the unit if necessary to protect human health and the environment.
- B. In deriving human health action levels for constituents in air, the RfC should be utilized as the action level, where available. The RfC includes exposure assumptions, and no calculations are necessary to calculate an action level. If a RfC is not available, the recommended methodology/assumptions shall be that followed in the Region 3 Quarterly Risk-Based Concentration Tables. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Executive Director reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through I.A.4.

V. Soils

- A. Action levels for constituents in soils shall be concentrations which meet the criteria specified in section I.A.1 through I.A.4 of this appendix.
- B. The calculation of human health action levels for soil includes several specific exposure routes which must be evaluated individually: 1) ingestion, 2) inhalation and 3) leachability to groundwater. In deriving action levels to address ingestion, inhalation and leaching, the methodology/assumptions found in the most recent Soil Screening Level Guidance should be reviewed for appropriate equations and assumptions. Because the science of risk assessment is in flux and technical

criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Executive Director reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through I.A.4.

VI. Sediment

- A. Action levels for constituents in sediment shall be based on whether human health or ecological health is the major concern. If ecological concerns are deemed to predominate, then action levels for constituents in sediment shall be concentrations based on the latest sediment screening values as calculated by Region 4. Because the science of risk assessment is in flux and technical criteria/opinion of today (e.g., content of standardized equations, use of default exposure assumptions, etc.) may change, the Executive Director reserves that right to revise the above recommended equations/assumptions as needed to meet the criteria listed in section I.A.1 through I.A.4.

If an ecological sediment screening value for a constituent of concern has not been generated by Region 4 and cannot be generated using the criteria in sections I.A.1 and I.A.2, then the ecological action level for sediment shall be background. If human health is the prevailing concern, then the human health action level for sediment shall address all applicable exposures.